WOOD
EL
Y.

CANCELS

FOR THE

INTRODUCTION

TO THE

REDUCTIONS

OF THE

GREENWICH LUNAR OBSERVATIONS.

STORAGE

SECTION III.

Comparison of Moon's Observed and Tabular Place.

The first important step towards this comparison is the Computation of Longitude and Ecliptic North Polar Distance from Right Ascension and North Polar Distance.

The elements required for this computation are the Geocentric North Polar Distance of the Moon's Center, and the Right Ascension of the Center, both for the same instant of time, together with the Apparent Obliquity of the Ecliptic. The first of these is computed in Forms 7, 8, or 10, for the time of passage of the limb which was observed by the transit; it therefore becomes necessary to deduce from the right ascension of the limb observed by the transit (computed in Form 3, as described in the First Section of this Introduction), the right ascension of the center at the same moment of time: and this deduction requires the use of a semidiameter. Now it will be remembered, that in order to obtain a vertical semidiameter agreeing with observation, it was found necessary to adopt, at different times, two different factors, by which the horizontal equatoreal parallax should be multiplied, in order to produce semidiameters agreeing with observation, viz., 0·274133 for the Quadrant, and 0·273136 for the Circle Observations. As each of these instruments required a separate factor, it was considered highly probable that each of the Transit Instruments also would require a separate factor, by which the tabular horizontal equatoreal parallax should be multiplied, in order that the duration of transit of semidiameter given by observation might agree with that found by computation; and that these factors would be different from those already determined for deducing vertical semidiameters. The method pursued, in order to find whether new factors would be required for the determination of a semidiameter for the reduction of the right ascension of the limb to that of the center, is as follows:—Half the difference of the times of transit of the two limbs was taken (the correction for defective illumination having been previously applied) for every observation in which both limbs were observed at the same transit: this is considered to be the duration of transit of semidiameter. The observed duration is then computed with an assumed provisional semidiameter by the formula—

$$\text{Duration of tr. of semidiam. in sidereal secs.} = \frac{366{\cdot}25}{365{\cdot}25} \times \frac{60 \times \text{semidiameter in sec. of arc}}{\sin \text{geoc. N.P.D.} \; (902{\cdot}46 - \text{change of R.A. in } 1^{m})}$$

the provisional semidiameter being the same as that previously used in Section II.

The comparisons of the results of these computations are contained in the following table—

Semidiameter of the Moon in R.A.

Year, Month, and Day.	Observed Duration of Transit of Semi-diameter.	Computed Duration of Transit of Semi-diameter.	Apparent Correction to Duration computed with provisional Semidiameter.	Year, Month, and Day.	Observed Duration of Transit of Semi-diameter.	Computed Duration of Transit of Semi-diameter.	Apparent Correction to Duration computed with provisional Semidiameter.
	m s	m s	s		m s	m s	s
1750. Dec. 12	1. 14·85	1. 14·60	+ 0·25	1765. July 2	1. 18·71	1. 18·65	+ 0·06
1751. Jan. 11	1. 9·87	1. 9·65	+ 0·22	Aug. 30	1. 7·14	1. 6·65	+ 0·49
Apr. 10	1. 2·79	1. 2·58	+ 0·21	1767. Aug. 9	1. 11·34	1. 11·33	+ 0·01
Sep. 5	1. 6·43	1. 6·33	+ 0·10	Oct. 7	1. 10·94	1. 10·87	+ 0·07
Dec. 2	1. 15·64	1. 15·48	+ 0·16	1768. Jan. 3	1. 10·96	1. 10·83	+ 0·13
24	1. 4·19	1. 4·32	− 0·13	Aug. 27	1. 8·11	1. 7·95	+ 0·16
31	1. 14·88	1. 14·51	+ 0·37	1769. June 18	1. 6·78	1. 6·73	+ 0·05
1752. Mar. 29	1. 4·43	1. 4·23	+ 0·20	Sep. 15	1. 6·06	1. 5·91	+ 0·15
May 27	1. 5·67	1. 5·29	+ 0·38	Dec. 12	1. 16·03	1. 16·11	− 0·08
Dec. 20	1. 14·30	1. 14·20	+ 0·10	1770. May 9	1. 6·33	1. 6·09	+ 0·24
1753. Feb. 17	1. 9·75	1. 9·51	+ 0·24	1771. Apr. 28	1. 8·55	1. 8·34	+ 0·21
Apr. 17	1. 7·38	1. 7·09	+ 0·29	Oct. 23	1. 4·56	1. 4·28	+ 0·28
Nov. 10	1. 7·15	1. 6·94	+ 0·21	Dec. 21	1. 10·71	1. 10·56	+ 0·15
1754. Jan. 8	1. 12·04	1. 11·80	+ 0·24	1772. Feb. 18	1. 10·17	1. 10·00	+ 0·17
May 6	1. 9·81	1. 9·88	− 0·07	May 16	1. 11·15	1. 11·04	+ 0·11
Sep. 1	1. 1·21	1. 1·11	+ 0·10	July 14	1. 6·71	1. 6·60	+ 0·11
Nov. 29	1. 6·19	1. 5·92	+ 0·27	1773. June 4	1. 13·39	1. 12·91	+ 0·48
1755. Jan. 27	1. 9·15	1. 9·01	+ 0·14	1774. Mar. 27	1. 6·63	1. 6·63	0·00
Aug. 21	1. 4·68	1. 4·48	+ 0·20	Aug. 21	1. 8·51	1. 8·32	+ 0·19
1756. Apr. 14	1. 9·19	1. 8·89	+ 0·30	Oct. 19	1. 4·40	1. 4·21	+ 0·19
July 11	1. 13·42	1. 12·96	+ 0·46	1775. Jan. 16	1. 4·10	1. 3·86	+ 0·24
Oct. 7	1. 3·89	1. 3·75	+ 0·14	Mar. 16	1. 3·13	1. 2·77	+ 0·36
Nov. 6	1. 3·49	1. 3·32	+ 0·17	Aug. 10	1. 12·86	1. 12·68	+ 0·18
1757. Jan. 5	1. 4·59	1. 4·55	+ 0·04	1776. Apr. 3	1. 1·51	1. 1·40	+ 0·11
Mar. 5	1. 3·62	1. 3·52	+ 0·10	July 30	1. 12·27	1. 12·32	− 0·05
Apr. 4	1. 5·50	1. 5·33	+ 0·17	1777. Nov. 14	1. 12·28	1. 12·11	+ 0·17
May 3	1. 8·40	1. 8·16	+ 0·24	1778. Mar. 12	1. 4·09	1. 4·04	+ 0·05
July 30	1. 13·30	1. 13·45	− 0·15	Apr. 11	1. 1·84	1. 1·80	+ 0·04
Aug. 28	1. 10·91	1. 10·86	+ 0·05	1779. Jan. 31	1. 14·48	1. 14·35	+ 0·13
1758. Aug. 18	1. 12·43	1. 12·33	+ 0·10	Mar. 31	1. 5·10	1. 4·99	+ 0·11
1759. Feb. 11	1. 4·65	1. 4·61	+ 0·04	Nov. 23	1. 12·26	1. 12·16	+ 0·10
July 9	1. 11·27	1. 10·94	+ 0·33	1780. Feb. 19	1. 13·06	1. 12·90	+ 0·16
Sep. 6	1. 9·89	1. 9·79	+ 0·10	Apr. 18	1. 7·82	1. 7·75	+ 0·07
Oct. 5	1. 9·67	1. 9·42	+ 0·25	1782. Feb. 27	1. 8·40	1. 8·40	0·00
1760. Jan. 2	1. 14·00	1. 13·76	+ 0·24	Nov. 19	1. 6·49	1. 6·49	0·00
Mar. 1	1. 4·21	1. 4·18	+ 0·03	1783. Mar. 18	1. 5·36	1. 5·35	+ 0·01
July 27	1. 8·70	1. 8·70	0·00	1784. July 2	1. 17·82	1. 17·80	+ 0·02
Nov. 22	1. 14·71	1. 14·50	+ 0·21	Sep. 28	1. 8·62	1. 8·65	− 0·03
1761. Feb. 18	1. 10·46	1. 10·27	+ 0·19	1785. Feb. 23	1. 1·46	1. 1·35	+ 0·11
Apr. 18	1. 3·59	1. 3·49	+ 0·10	1786. Feb. 12	1. 4·38	1. 4·18	+ 0·20
July 16	1. 8·13	1. 7·81	+ 0·32	Apr. 13	1. 3·08	1. 2·78	+ 0·30
1762. May 7	1. 8·21	1. 7·76	+ 0·45	June 11	1. 9·38	1. 9·45	− 0·07
July 5	1. 9·92	1. 9·83	+ 0·09	1787. May 31	1. 7·17	1. 6·88	+ 0·29
Nov. 1	1. 6·12	1. 5·90	+ 0·22	Aug. 28	1. 3·92	1. 3·92	0·00
1763. Sep. 21	1. 0·32	1. 0·69	− 0·37	1788. May 19	1. 7·54	1. 7·38	+ 0·16
1764. Mar. 17	1. 9·02	1. 8·88	+ 0·14	Aug. 16	1. 1·62	1. 1·71	− 0·09
1765. June 3	1. 19·58	1. 19·46	+ 0·12	Nov. 13	1. 11·06	1. 10·71	+ 0·35

Semidiameter of the Moon in R.A.—*continued.*

Year, Month, and Day.	Observed Duration of Transit of Semi-diameter.	Computed Duration of Transit of Semi-diameter.	Apparent Correction to Duration computed with provisional Semidiameter.	Year, Month, and Day.	Observed Duration of Transit of Semi-diameter.	Computed Duration of Transit of Semi-diameter.	Apparent Correction to Duration computed with provisional Semidiameter.
	m s	m s	s		m s	m s	s
1789. June 7	1. 9·06	1. 8·95	+ 0·11	1805. Feb. 13	1. 7·60	1. 7·46	+ 0·14
Nov. 2	1. 4·65	1. 4·75	— 0·10	Apr. 13	1. 4·55	1. 4·54	+ 0·01
1790. Aug. 24	1. 2·57	1. 2·45	+ 0·12	1806. June 30	1. 6·49	1. 6·39	+ 0·10
1791. May 17	1. 12·92	1. 12·98	— 0·06	Sep. 27	1. 2·39	1. 2·41	— 0·02
July 15	1. 10·47	1. 10·39	+ 0·08	1807. Mar. 23	1. 9·89	1. 9·67	+ 0·22
Oct. 11	1. 2·81	1. 2·76	+ 0·05	June 19	1. 9·92	1. 9·81	+ 0·11
1792. Oct. 29	1. 5·25	1. 5·18	+ 0·07	Dec. 14	1. 9·03	1. 8·71	+ 0·32
1793. Nov. 17	1. 8·23	1. 8·19	+ 0·04	1808. July 7	1. 10·32	1. 10·12	+ 0·20
1794. Jan. 15	1. 5·91	1. 5·68	+ 0·23	Sep. 4	1. 2·66	1. 2·56	+ 0·10
July 12	1. 10·78	1. 10·80	— 0·02	1811. June 6	1. 10·01	1. 9·76	+ 0·25
Oct. 8	1. 10·00	1. 9·79	+ 0·21	Sep. 2	1. 10·60	1. 10·35	+ 0·25
Dec. 6	1. 12·00	1. 11·65	+ 0·35	1812. Sep. 20	1. 9·59	1. 9·42	+ 0·17
1795. Feb. 3	1. 6·66	1. 6·65	+ 0·01	1813. June 13	1. 5·19	1. 5·15	+ 0·04
May 3	1. 1·90	1. 1·88	+ 0·02	1815. Aug. 19	1. 3·69	1. 3·51	+ 0·18
July 31	1. 8·58	1. 8·36	+ 0·22	1816. Aug. 7	1. 6·62	1. 6·45	+ 0·17
Aug. 29	1. 8·24	1. 8·12	+ 0·12	1817. Feb. 1	1. 12·30	1. 12·11	+ 0·19
Oct. 27	1. 10·17	1. 10·13	+ 0·04	June 28	1. 16·09	1. 15·86	+ 0·23
1796. Feb. 22	1. 7·33	1. 7·27	+ 0·06	1822. Sep. 30	1. 7·55	1. 7·44	+ 0·11
Apr. 21	1. 2·61	1. 2·38	+ 0·23	Nov. 28	1. 18·34	1. 18·24	+ 0·10
July 19	1. 6·57	1. 6·52	+ 0·05	1823. Aug. 21	1. 2·55	1. 2·44	+ 0·11
Sep. 16	1. 4·90	1. 4·92	— 0·02	Oct. 19	1. 7·54	1. 7·63	— 0·09
1798. Jan. 31	1. 15·50	1. 15·31	+ 0·19	1824. Aug. 9	1. 2·10	1. 2·05	+ 0·05
1799. July 16	1. 13·12	1. 13·06	+ 0·06	Sep. 8	1. 0·97	1. 0·92	+ 0·05
Sep. 13	1. 2·48	1. 2·21	+ 0·27	1825. Jan. 4	1. 12·84	1. 12·78	+ 0·06
1800. May 8	1. 13·86	1. 13·69	+ 0·17	May 31	1. 12·96	1. 12·67	+ 0·29
Aug. 4	1. 12·35	1. 12·21	+ 0·14	June 29	1. 10·76	1. 10·53	+ 0·23
Oct. 2	1. 3·18	1. 3·12	+ 0·06	July 29	1. 5·18	1. 4·96	+ 0·22
1801. May 27	1. 16·71	1. 16·56	+ 0·15	Oct. 26	1. 3·45	1. 3·45	0·00
Aug. 23	1. 10·57	1. 10·45	+ 0·12	1826. June 19	1. 13·72	1. 13·54	+ 0·18
Dec. 19	1. 10·54	1. 10·52	+ 0·02	Aug. 17	1. 4·98	1. 4·91	+ 0·07
1802. Jan. 18	1. 7·09	1. 6·89	+ 0·20	Oct. 15	1. 2·69	1. 2·61	+ 0·08
Sep. 11	1. 9·62	1. 9·56	+ 0·06	1827. July 8	1. 13·17	1. 13·16	+ 0·01
1803. May 6	1. 6·80	1. 6·73	+ 0·07	1828. Oct. 22	1. 7·64	1. 7·60	+ 0·04
Sep. 30	1. 9·93	1. 9·90	+ 0·03	1829. Jan. 19	1. 3·82	1. 3·70	+ 0·12

From this table it appears that the mean correction to the provisional semidiameter, from 142 observations of both limbs by the Old Transit Instrument, extending from 1750, December 12, to 1815, August 19, is + 0ˢ·134, and the corresponding provisional semidiameter 68ˢ·142; the same quantities for the New Transit Instrument from 20 observations, extending from 1816, August 7, to 1829, January 19, are + 0ˢ·111 and 68ˢ·153. Hence the factor by which the tabular horizontal parallax should be multiplied, in order to produce a semidiameter agreeing in its mean with that derived from observation, is, for the

Old Transit, $\frac{68{\cdot}276}{68{\cdot}142} \times 0{\cdot}2725 = 0{\cdot}273036$, and for the New Transit, $\frac{68{\cdot}264}{68{\cdot}153} \times 0{\cdot}2725 = 0{\cdot}27294$. Before the computations arrived at this stage, all the vertical semidiameters had been computed, by means of the factors already mentioned: it therefore became a matter of convenience to reduce these vertical semidiameters to others applicable to right ascensions; for this purpose it was necessary to compare the factors of the Old Transit and Quadrant, the Old Transit and Circle, the New Transit and Circle, and the New Transit and Quadrant, during their combined use. Thus, during the Quadrant Observations, the vertical semidiameter is found by means of the factor 0·274133, but, to agree with observations by the Old Transit, the factor should be 0·273036; hence the semidiameter found by the former of these factors will be reduced to that which would be found by the latter by multiplying it by $\frac{0{\cdot}273036}{0{\cdot}274133}$, or, which is the same, during the combination of the Quadrant and the Old Transit the constant logarithm 9·9982581 must be added to the logarithm of the vertical semidiameter in order to reduce it to the logarithm of the semidiameter fit to be applied to observations made with the Old Transit Instrument. The following constant logarithms were found in a similar manner:

For Old Transit and Circle, 9·9998401; for New Transit and Circle, 9·9996932; for New Transit and Quadrant, 9·9981112. By an error (of which the effects are insensible), the numbers 9·9995599 and 9·9979779 were used instead of the two last.

Having thus determined the factors by which the vertical semidiameter already computed in Form 12 should be multiplied to render them proper for application to transit observations, the correction by which the right ascension of the limb at transit of limb is reduced to the right ascension of the center at transit of limb is computed by the formula,

$$\text{Log. correc.} = \text{log. semidiameter (from Form 12)} + \text{ar. co. log. sin N.P.D.} + C,$$

in which C represents one of the constant logarithms given above, depending on the combination of the instruments in use. This correction (named *correction for semidiameter in arc*, in Skeleton Form 11) being applied (positive for the first limb, negative for the second) to the right ascension of the limb reduced to arc, gives the right ascension of the center in arc; and this being reduced to time gives the right ascension of the center exhibited in the tables of Section I.

The Longitude and Ecliptic North Polar Distance are then computed by the following formulæ:—

$$\text{Cot } \psi = \text{sin R. A. tan N. P. D.}$$

$$\varphi = \psi - \text{obliquity}$$

$$\text{Tan } \theta = \frac{\text{tan R. A.}}{\cos \psi}$$

$$\text{Tan longitude} = \tan \theta \,.\, \cos \varphi$$

$$\text{Cos Ecliptic North Polar Distance} = \sin \theta \,.\, \sin \varphi.$$

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{ Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D. }
{ Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D. }

Longitude.

170°	171°	172°	173°	174°	175°	176°	177°	178°	179°		
+9·9667	+9·9660	+9·9654	+9·9648	+9·9642	+9·9637	+9·9632	+9·9628	+9·9624	+9·9620	Log. P'	84°
−9·6025	−9·6031	−9·6037	−9·6041	−9·6044	−9·6045	−9·6046	−9·6046	−9·6045	−9·6043	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5995	+9·5997	Log. R'	
+9·9632	+9·9630	+9·9628	+9·9626	+9·9625	+9·9624	+9·9623	+9·9622	+9·9622	+9·9621	Log. S'	
+9·9665	+9·9659	+9·9653	+9·9647	+9·9642	+9·9637	+9·9633	+9·9629	+9·9625	+9·9622	Log. P'	85°
−9·6007	−9·6014	−9·6020	−9·6023	−9·6028	−9·6030	−9·6031	−9·6031	−9·6031	−9·6030	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5995	+9·5997	Log. R'	
+9·9632	+9·9630	+9·9629	+9·9627	+9·9626	+9·9625	+9·9624	+9·9623	+9·9623	+9·9622	Log. S'	
+9·9662	+9·9656	+9·9651	+9·9646	+9·9641	+9·9637	+9·9633	+9·9629	+9·9626	+9·9623	Log. P'	86°
−9·5991	−9·5998	−9·6005	−9·6010	−9·6014	−9·6016	−9·6018	−9·6019	−9·6019	−9·6018	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9633	+9·9631	+9·9630	+9·9628	+9·9627	+9·9626	+9·9625	+9·9624	+9·9624	+9·9623	Log. S'	
+9·9659	+9·9654	+9·9649	+9·9644	+9·9640	+9·9636	+9·9633	+9·9630	+9·9627	+9·9624	Log. P'	87°
−9·5978	−9·5986	−9·5993	−9·5999	−9·6003	−9·6007	−9·6008	−9·6009	−9·6010	−9·6010	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9634	+9·9632	+9·9631	+9·9629	+9·9628	+9·9627	+9·9626	+9·9625	+9·9625	+9·9624	Log. S'	
+9·9655	+9·9650	+9·9646	+9·9642	+9·9638	+9·9635	+9·9632	+9·9629	+9·9627	+9·9625	Log. P'	88°
−9·5967	−9·5975	−9·5983	−9·5989	−9·5994	−9·5998	−9·6000	−9·6002	−9·6003	−9·6003	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9625	Log. S'	
+9·9651	+9·9647	+9·9643	+9·9639	+9·9636	+9·9633	+9·9631	+9·9629	+9·9627	+9·9626	Log. P'	89°
−9·5959	−9·5968	−9·5975	−9·5982	−9·5987	−9·5991	−9·5994	−9·5996	−9·5998	−9·5999	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9626	Log. S'	
+9·9647	+9·9643	+9·9639	+9·9636	+9·9633	+9·9631	+9·9629	+9·9627	+9·9626	+9·9625	Log. P'	90°
−9·5953	−9·5962	−9·5970	−9·5977	−9·5983	−9·5988	−9·5991	−9·5994	−9·5996	−9·5997	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9637	+9·9635	+9·9633	+9·9631	+9·9630	+9·9629	+9·9628	+9·9627	+9·9627	+9·9626	Log. S'	
+9·9642	+9·9637	+9·9635	+9·9632	+9·9630	+9·9628	+9·9627	+9·9626	+9·9625	+9·9625	Log. P'	91°
−9·5949	−9·5959	−9·5967	−9·5975	−9·5981	−9·5986	−9·5990	−9·5993	−9·5996	−9·5998	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9626	Log. S'	
+9·9636	+9·9633	+9·9630	+9·9628	+9·9626	+9·9625	+9·9624	+9·9624	+9·9623	+9·9623	Log. P'	92°
−9·5948	−9·5958	−9·5967	−9·5975	−9·5982	−9·5988	−9·5992	−9·5996	−9·5999	−9·6001	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9625	Log. S'	
+9·9630	+9·9627	+9·9625	+9·9623	+9·9622	+9·9621	+9·9621	+9·9621	+9·9621	+9·9622	Log. P'	93°
−9·5949	−9·5960	−9·5969	−9·5978	−9·5985	−9·5991	−9·5996	−9·6000	−9·6004	−9·6007	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9634	+9·9632	+9·9631	+9·9629	+9·9628	+9·9627	+9·9626	+9·9625	+9·9625	+9·9624	Log. S'	
+9·9623	+9·9621	+9·9620	+9·9619	+9·9618	+9·9617	+9·9617	+9·9617	+9·9618	+9·9619	Log. P'	94°
−9·5953	−9·5964	−9·5974	−9·5983	−9·5990	−9·5997	−9·6002	−9·6007	−9·6011	−9·6014	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5996	+9·5997	Log. R'	
+9·9633	+9·9631	+9·9630	+9·9628	+9·9627	+9·9626	+9·9625	+9·9624	+9·9624	+9·9623	Log. S'	
+9·9616	+9·9615	+9·9614	+9·9613	+9·9613	+9·9613	+9·9613	+9·9614	+9·9615	+9·9617	Log. P'	95°
−9·5959	−9·5971	−9·5981	−9·5990	−9·5998	−9·6005	−9·6011	−9·6016	−9·6021	−9·6025	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5995	+9·5997	Log. R'	
+9·9632	+9·9630	+9·9629	+9·9627	+9·9626	+9·9625	+9·9624	+9·9623	+9·9623	+9·9622	Log. S'	
+9·9609	+9·9608	+9·9608	+9·9608	+9·9608	+9·9608	+9·9609	+9·9610	+9·9612	+9·9614	Log. P'	96°
−9·5967	−9·5979	−9·5991	−9·6001	−9·6009	−9·6017	−9·6023	−9·6029	−9·6034	−9·6038	Log. Q'	
+9·5941	+9·5952	+9·5963	+9·5972	+9·5979	+9·5985	+9·5989	+9·5993	+9·5995	+9·5997	Log. R'	
+9·9632	+9·9630	+9·9628	+9·9626	+9·9625	+9·9624	+9·9623	+9·9622	+9·9622	+9·9621	Log. S'	
170°	171°	172°	173°	174°	175°	176°	177°	178°	179°		

Longitude.

Ecliptic North Polar Distance.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

$$\left\{\begin{array}{l}\text{Change of R. A. in arc} = P' \times \text{change of Longitude} + Q' \times \text{change of Ec. N. P. D.}\\ \text{Change of N. P. D.} = R' \times \text{change of Longitude} + S' \times \text{change of Ec. N. P. D.}\end{array}\right\}$$

Longitude.

Ecliptic North Polar Distance.			180°	181°	182°	183°	184°	185°	186°	187°	188°	189°
	84°	Log. P'	+9·9617	+9·9614	+9·9612	+9·9610	+9·9609	+9·9608	+9·9608	+9·9608	+9·9608	+9·9608
		Log. Q'	−9·6041	−9·6038	−9·6034	−9·6029	−9·6023	−9·6017	−9·6009	−9·6001	−9·5991	−9·5979
		Log. R'	+9·5997	+9·5997	+9·5995	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9621	+9·9621	+9·9622	+9·9622	+9·9623	+9·9624	+9·9625	+9·9626	+9·9628	+9·9630
	85°	Log. P'	+9·9619	+9·9617	+9·9615	+9·9614	+9·9613	+9·9613	+9·9613	+9·9613	+9·9614	+9·9615
		Log. Q'	−9·6028	−9·6025	−9·6021	−9·6016	−9·6011	−9·6005	−9·5998	−9·5990	−9·5981	−9·5971
		Log. R'	+9·5997	+9·5997	+9·5995	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9622	+9·9622	+9·9623	+9·9623	+9·9624	+9·9625	+9·9626	+9·9627	+9·9629	+9·9630
	86°	Log. P'	+9·9621	+9·9619	+9·9618	+9·9617	+9·9617	+9·9617	+9·9618	+9·9616	+9·9620	+9·9621
		Log. Q'	−9·6017	−9·6014	−9·6011	−9·6007	−9·6002	−9·5997	−9·5990	−9·5983	−9·5974	−9·5964
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9623	+9·9623	+9·9624	+9·9624	+9·9625	+9·9626	+9·9627	+9·9628	+9·9630	+9·9631
	87°	Log. P'	+9·9622	+9·9622	+9·9621	+9·9621	+9·9621	+9·9621	+9·9622	+9·9623	+9·9625	+9·9627
		Log. Q'	−9·6009	−9·6007	−9·6004	−9·6000	−9·5996	−9·5991	−9·5985	−9·5978	−9·5969	−9·5960
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9624	+9·9624	+9·9625	+9·9625	+9·9626	+9·9627	+9·9628	+9·9629	+9·9631	+9·9632
	88°	Log. P'	+9·9624	+9·9623	+9·9623	+9·9624	+9·9624	+9·9625	+9·9626	+9·9628	+9·9630	+9·9633
		Log. Q'	−9·6003	−9·6001	−9·5999	−9·5996	−9·5992	−9·5988	−9·5982	−9·5975	−9·5967	−9·5958
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9625	+9·9625	+9·9626	+9·9626	+9·9627	+9·9628	+9·9629	+9·9630	+9·9632	+9·9634
	89°	Log. P'	+9·9625	+9·9625	+9·9625	+9·9626	+9·9627	+9·9628	+9·9630	+9·9632	+9·9635	+9·9637
		Log. Q'	−9·5999	−9·5998	−9·5996	−9·5993	−9·5990	−9·5986	−9·5981	−9·5975	−9·5967	−9·5959
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9626	+9·9626	+9·9626	+9·9626	+9·9627	+9·9628	+9·9629	+9·9630	+9·9632	+9·9634
	90°	Log. P'	+9·9625	+9·9625	+9·9626	+9·9627	+9·9629	+9·9631	+9·9633	+9·9636	+9·9639	+9·9643
		Log. Q'	−9·5998	−9·5997	−9·5996	−9·5994	−9·5991	−9·5988	−9·5983	−9·5977	−9·5970	−9·5962
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9626	+9·9626	+9·9627	+9·9627	+9·9628	+9·9629	+9·9630	+9·9631	+9·9633	+9·9635
	91°	Log. P'	+9·9625	+9·9626	+9·9627	+9·9629	+9·9631	+9·9633	+9·9636	+9·9639	+9·9643	+9·9647
		Log. Q'	−9·5999	−9·5999	−9·5998	−9·5996	−9·5994	−9·5991	−9·5987	−9·5982	−9·5975	−9·5968
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9626	+9·9626	+9·9626	+9·9626	+9·9627	+9·9628	+9·9629	+9·9630	+9·9632	+9·9634
	92°	Log. P'	+9·9624	+9·9625	+9·9627	+9·9629	+9·9632	+9·9635	+9·9638	+9·9642	+9·9646	+9·9650
		Log. Q'	−9·6003	−9·6003	−9·6003	−9·6002	−9·6000	−9·5998	−9·5994	−9·5989	−9·5983	−9·5975
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9625	+9·9625	+9·9626	+9·9626	+9·9627	+9·9628	+9·9629	+9·9630	+9·9632	+9·9634
	93°	Log. P'	+9·9623	+9·9624	+9·9627	+9·9630	+9·9633	+9·9636	+9·9640	+9·9644	+9·9649	+9·9654
		Log. Q'	−9·6009	−9·6010	−9·6010	−9·6009	−9·6008	−9·6007	−9·6003	−9·5999	−9·5993	−9·5986
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9624	+9·9624	+9·9625	+9·9625	+9·9626	+9·9627	+9·9628	+9·9629	+9·9631	+9·9632
	94°	Log. P'	+9·9621	+9·9623	+9·9626	+9·9629	+9·9633	+9·9637	+9·9641	+9·9646	+9·9651	+9·9656
		Log. Q'	−9·6017	−9·6018	−9·6019	−9·6019	−9·6018	−9·6016	−9·6014	−9·6010	−9·6005	−9·5998
		Log. R'	+9·5998	+9·5997	+9·5996	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9623	+9·9623	+9·9624	+9·9624	+9·9625	+9·9626	+9·9627	+9·9628	+9·9630	+9·9631
	95°	Log. P'	+9·9619	+9·9622	+9·9625	+9·9629	+9·9633	+9·9637	+9·9642	+9·9647	+9·9653	+9·9659
		Log. Q'	−9·6028	−9·6030	−9·6031	−9·6031	−9·6031	−9·6030	−9·6028	−9·6023	−9·6020	−9·6014
		Log. R'	+9·5997	+9·5997	+9·5995	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9622	+9·9622	+9·9623	+9·9623	+9·9624	+9·9625	+9·9626	+9·9627	+9·9629	+9·9630
	96°	Log. P'	+9·9617	+9·9620	+9·9624	+9·9628	+9·9632	+9·9637	+9·9642	+9·9648	+9·9654	+9·9660
		Log. Q'	−9·6041	−9·6043	−9·6045	−9·6046	−9·6046	−9·6045	−9·6044	−9·6041	−9·6037	−9·6031
		Log. R'	+9·5997	+9·5997	+9·5995	+9·5993	+9·5989	+9·5985	+9·5979	+9·5972	+9·5963	+9·5952
		Log. S'	+9·9621	+9·9621	+9·9622	+9·9622	+9·9623	+9·9624	+9·9625	+9·9626	+9·9628	+9·9630
			180°	181°	182°	183°	184°	185°	186°	187°	188°	189°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

$$\left\{\begin{array}{l}\text{Change of R. A. in arc} = P' \times \text{change of Longitude} + Q' \times \text{change of Ec. N. P. D.}\\ \text{Change of N. P. D.} \quad = R' \times \text{change of Longitude} + S' \times \text{change of Ec. N. P. D.}\end{array}\right\}$$

Longitude.

190°	191°	192°	193°	194°	195°	196°	197°	198°	199°		
+9·9609	+9·9610	+9·9612	+9·9614	+9·9617	+9·9620	+9·9624	+9·9628	+9·9632	+9·9636	Log. P'	84°
−9·5967	−9·5954	−9·5940	−9·5927	−9·5912	−9·5896	−9·5879	−9·5861	−9·5841	−9·5820	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5888	+9·5872	+9·5855	+9·5836	+9·5816	+9·5794	Log. R'	
+9·9632	+9·9634	+9·9636	+9·9639	+9·9642	+9·9645	+9·9648	+9·9651	+9·9655	+9·9658	Log. S'	
+9·9616	+9·9618	+9·9620	+9·9623	+9·9626	+9·9630	+9·9634	+9·9638	+9·9643	+9·9648	Log. P'	85°
−9·5959	−9·5946	−9·5933	−9·5920	−9·5905	−9·5890	−9·5873	−9·5855	−9·5836	−9·5816	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5888	+9·5872	+9·5855	+9·5836	+9·5816	+9·5794	Log. R'	
+9·9632	+9·9634	+9·9637	+9·9639	+9·9642	+9·9645	+9·9649	+9·9652	+9·9656	+9·9659	Log. S'	
+9·9623	+9·9625	+9·9628	+9·9631	+9·9635	+9·9639	+9·9643	+9·9648	+9·9653	+9·9659	Log. P'	86°
−9·5953	−9·5941	−9·5928	−9·5914	−9·5900	−9·5885	−9·5869	−9·5852	−9·5834	−9·5814	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5888	+9·5871	+9·5854	+9·5836	+9·5816	+9·5794	Log. R'	
+9·9633	+9·9635	+9·9638	+9·9640	+9·9643	+9·9646	+9·9650	+9·9653	+9·9657	+9·9660	Log. S'	
+9·9630	+9·9633	+9·9636	+9·9639	+9·9643	+9·9647	+9·9652	+9·9657	+9·9663	+9·9669	Log. P'	87°
−9·5949	−9·5937	−9·5925	−9·5913	−9·5899	−9·5884	−9·5868	−9·5852	−9·5834	−9·5815	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5887	+9·5870	+9·5853	+9·5834	+9·5815	+9·5793	Log. R'	
+9·9634	+9·9636	+9·9639	+9·9641	+9·9644	+9·9647	+9·9650	+9·9653	+9·9657	+9·9661	Log. S'	
+9·9636	+9·9639	+9·9643	+9·9647	+9·9651	+9·9656	+9·9661	+9·9667	+9·9673	+9·9680	Log. P'	88°
−9·5948	−9·5937	−9·5925	−9·5913	−9·5899	−9·5884	−9·5869	−9·5853	−9·5836	−9·5817	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5887	+9·5870	+9·5853	+9·5834	+9·5815	+9·5793	Log. R'	
+9·9636	+9·9638	+9·9640	+9·9642	+9·9645	+9·9648	+9·9651	+9·9654	+9·9658	+9·9662	Log. S'	
+9·9612	+9·9616	+9·9650	+9·9654	+9·9659	+9·9664	+9·9669	+9·9676	+9·9683	+9·9690	Log. P'	89°
−9·5949	−9·5938	−9·5927	−9·5915	−9·5902	−9·5888	−9·5873	−9·5858	−9·5841	−9·5823	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5887	+9·5870	+9·5853	+9·5834	+9·5815	+9·5793	Log. R	
+9·9636	+9·9638	+9·9640	+9·9642	+9·9645	+9·9648	+9·9651	+9·9654	+9·9658	+9·9662	Log. S'	
+9·9647	+9·9651	+9·9656	+9·9661	+9·9666	+9·9672	+9·9677	+9·9685	+9·9692	+9·9699	Log. P'	90°
−9·5953	−9·5943	−9·5932	−9·5920	−9·5907	−9·5893	−9·5879	−9·5864	−9·5848	−9·5830	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5887	+9·5870	+9·5853	+9·5834	+9·5815	+9·5793	Log. R'	
+9·9637	+9·9639	+9·9641	+9·9643	+9·9646	+9·9649	+9·9652	+9·9655	+9·9659	+9·9663	Log. S'	
+9·9651	+9·9656	+9·9661	+9·9666	+9·9672	+9·9678	+9·9685	+9·9692	+9·9700	+9·9708	Log. P'	91°
−9·5959	−9·5950	−9·5939	−9·5927	−9·5915	−9·5902	−9·5888	−9·5874	−9·5858	−9·5841	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5887	+9·5870	+9·5853	+9·5834	+9·5815	+9·5793	Log. R'	
+9·9636	+9·9638	+9·9640	+9·9642	+9·9645	+9·9648	+9·9651	+9·9654	+9·9658	+9·9662	Log. S'	
+9·9655	+9·9660	+9·9666	+9·9672	+9·9678	+9·9685	+9·9692	+9·9700	+9·9708	+9·9716	Log. P'	92°
−9·5967	−9·5958	−9·5948	−9·5938	−9·5926	−9·5914	−9·5900	−9·5886	−9·5870	−9·5853	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5887	+9·5870	+9·5853	+9·5834	+9·5815	+9·5793	Log. R'	
+9·9636	+9·9638	+9·9640	+9·9642	+9·9645	+9·9648	+9·9651	+9·9654	+9·9658	+9·9662	Log. S'	
+9·9659	+9·9665	+9·9671	+9·9677	+9·9684	+9·9691	+9·9699	+9·9707	+9·9716	+9·9725	Log. P'	93°
−9·5978	−9·5969	−9·5960	−9·5950	−9·5939	−9·5927	−9·5914	−9·5900	−9·5885	−9·5869	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5888	+9·5871	+9·5854	+9·5835	+9·5816	+9·5794	Log. R'	
+9·9634	+9·9636	+9·9638	+9·9641	+9·9644	+9·9647	+9·9650	+9·9653	+9·9657	+9·9661	Log. S'	
+9·9662	+9·9668	+9·9675	+9·9682	+9·9689	+9·9697	+9·9705	+9·9714	+9·9723	+9·9732	Log. P'	94°
−9·5991	−9·5983	−9·5974	−9·5964	−9·5955	−9·5944	−9·5931	−9·5918	−9·5903	−9·5887	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5888	+9·5871	+9·5854	+9·5835	+9·5816	+9·5794	Log. R'	
+9·9633	+9·9635	+9·9637	+9·9640	+9·9643	+9·9646	+9·9650	+9·9653	+9·9657	+9·9660	Log. S'	
+9·9665	+9·9672	+9·9679	+9·9686	+9·9694	+9·9702	+9·9711	+9·9720	+9·9730	+9·9740	Log. P'	95°
−9·6007	−9·5999	−9·5991	−9·5983	−9·5973	−9·5962	−9·5950	−9·5937	−9·5923	−9·5908	Log. Q'	
+9·5941	+9·5929	+9·5916	+9·5902	+9·5888	+9·5872	+9·5855	+9·5836	+9·5816	+9·5794	Log. R'	
+9·9632	+9·9634	+9·9636	+9·9639	+9·9642	+9·9645	+9·9649	+9·9652	+9·9656	+9·9659	Log. S'	
+9·9667	+9·9674	+9·9682	+9·9690	+9·9699	+9·9708	+9·9717	+9·9727	+9·9737	+9·9747	Log. P'	96°
−9·6025	−9·6017	−9·6010	−9·6002	−9·5993	−9·5983	+9·5972	−9·5960	−9·5947	−9·5932	Log. Q'	
+9·5941	+9·5928	+9·5916	+9·5903	+9·5888	+9·5872	+9·5855	+9·5836	+9·5816	+9·5794	Log. R'	
+9·9632	+9·9634	+9·9636	+9·9639	+9·9642	+9·9645	+9·9648	+9·9651	+9·9655	+9·9658	Log. S'	
190°	191°	192°	193°	194°	195°	196°	197°	198°	199°		

Longitude.

Ecliptic North Polar Distance.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.

Longitude.

Ecliptic North Polar Distance.		200°	201°	202°	203°	204°	205°	206°	207°	208°	209°
84°	Log. P'	+9·9641	+9·9646	+9·9652	+9·9658	+9·9665	+9·9672	+9·9679	+9·9686	+9·9694	+9·9701
	Log. Q'	−9·5798	−9·5774	−9·5748	−9·5721	−9·5694	−9·5666	−9·5637	−9·5606	−9·5574	−9·5542
	Log. R'	+9·5771	+9·5745	+9·5718	+9·5690	+9·5661	+9·5631	+9·5599	+9·5566	+9·5532	+9·5497
	Log. S'	+9·9662	+9·9666	+9·9671	+9·9675	+9·9680	+9·9685	+9·9690	+9·9695	+9·9700	+9·9705
85°	Log. P'	+9·9653	+9·9659	+9·9665	+9·9672	+9·9679	+9·9686	+9·9694	+9·9701	+9·9709	+9·9717
	Log. Q'	−9·5794	−9·5771	−9·5746	−9·5720	−9·5693	−9·5665	−9·5636	−9·5605	−9·5574	−9·5543
	Log. R'	+9·5771	+9·5745	+9·5718	+9·5690	+9·5661	+9·5631	+9·5599	+9·5566	+9·5533	+9·5498
	Log. S'	+9·9663	+9·9667	+9·9671	+9·9675	+9·9680	+9·9685	+9·9690	+9·9695	+9·9700	+9·9705
86°	Log. P'	+9·9665	+9·9671	+9·9678	+9·9685	+9·9692	+9·9700	+9·9708	+9·9716	+9·9724	+9·9732
	Log. Q'	−9·5793	−9·5770	−9·5746	−9·5721	−9·5694	−9·5667	−9·5638	−9·5608	−9·5577	−9·5545
	Log. R'	+9·5771	+9·5745	+9·5719	+9·5691	+9·5662	+9·5632	+9·5600	+9·5566	+9·5533	+9·5498
	Log. S'	+9·9664	+9·9668	+9·9672	+9·9676	+9·9681	+9·9686	+9·9691	+9·9696	+9·9701	+9·9706
87°	Log. P'	+9·9676	+9·9683	+9·9690	+9·9697	+9·9705	+9·9713	+9·9721	+9·9729	+9·9738	+9·9747
	Log. Q'	−9·5794	−9·5772	−9·5748	−9·5723	−9·5697	−9·5670	−9·5642	−9·5613	−9·5582	−9·5551
	Log. R'	+9·5770	+9·5745	+9·5719	+9·5692	+9·5663	+9·5633	+9·5601	+9·5566	+9·5534	+9·5499
	Log. S'	+9·9665	+9·9669	+9·9673	+9·9677	+9·9682	+9·9687	+9·9692	+9·9697	+9·9702	+9·9707
88°	Log. P'	+9·9687	+9·9694	+9·9701	+9·9709	+9·9717	+9·9725	+9·9734	+9·9743	+9·9752	+9·9762
	Log. Q'	−9·5797	−9·5775	−9·5752	−9·5728	−9·5703	−9·5677	−9·5649	−9·5620	−9·5590	−9·5560
	Log. R'	+9·5770	+9·5745	+9·5719	+9·5692	+9·5663	+9·5633	+9·5601	+9·5566	+9·5534	+9·5499
	Log. S'	+9·9666	+9·9670	+9·9674	+9·9678	+9·9683	+9·9687	+9·9692	+9·9697	+9·9702	+9·9707
89°	Log. P'	+9·9697	+9·9704	+9·9712	+9·9720	+9·9729	+9·9738	+9·9747	+9·9756	+9·9766	+9·9776
	Log. Q'	−9·5803	−9·5782	−9·5759	−9·5736	−9·5711	−9·5685	−9·5658	−9·5630	−9·5600	−9·5570
	Log. R'	+9·5770	+9·5745	+9·5719	+9·5692	+9·5663	+9·5633	+9·5601	+9·5566	+9·5534	+9·5499
	Log. S'	+9·9666	+9·9670	+9·9674	+9·9678	+9·9683	+9·9687	+9·9692	+9·9697	+9·9702	+9·9707
90°	Log. P'	+9·9707	+9·9715	+9·9724	+9·9732	+9·9741	+9·9750	+9·9759	+9·9769	+9·9779	+9·9790
	Log. Q'	−9·5811	−9·5791	−9·5769	−9·5746	−9·5722	−9·5697	−9·5670	−9·5642	−9·5612	−9·5582
	Log. R'	+9·5770	+9·5745	+9·5719	+9·5692	+9·5663	+9·5633	+9·5601	+9·5566	+9·5534	+9·5499
	Log. S'	+9·9667	+9·9671	+9·9675	+9·9679	+9·9684	+9·9688	+9·9693	+9·9698	+9·9703	+9·9708
91°	Log. P'	+9·9716	+9·9725	+9·9734	+9·9743	+9·9753	+9·9762	+9·9772	+9·9782	+9·9792	+9·9803
	Log. Q'	−9·5822	−9·5802	−9·5781	−9·5759	−9·5735	−9·5710	−9·5683	−9·5655	−9·5626	−9·5597
	Log. R'	+9·5770	+9·5745	+9·5719	+9·5692	+9·5663	+9·5632	+9·5601	+9·5566	+9·5534	+9·5499
	Log. S'	+9·9666	+9·9670	+9·9674	+9·9678	+9·9683	+9·9687	+9·9692	+9·9697	+9·9702	+9·9707
92°	Log. P'	+9·9725	+9·9734	+9·9744	+9·9754	+9·9764	+9·9774	+9·9784	+9·9794	+9·9805	+9·9817
	Log. Q'	−9·5835	−9·5816	−9·5795	−9·5773	−9·5750	−9·5725	−9·5699	−9·5671	−9·5643	−9·5615
	Log. R'	+9·5770	+9·5745	+9·5719	+9·5692	+9·5663	+9·5632	+9·5601	+9·5566	+9·5534	+9·5499
	Log. S'	+9·9666	+9·9670	+9 9674	+9·9678	+9·9683	+9·9687	+9·9692	+9·9697	+9·9702	+9·9707
93°	Log. P'	+9·9734	+9·9744	+9·9754	+9·9764	+9·9775	+9·9785	+9·9796	+9·9807	+9·9818	+9·9830
	Log. Q'	−9·5851	−9·5832	−9·5812	−9·5790	−9·5767	−9·5743	−9·5718	−9·5691	−9·5663	−9·5635
	Log. R'	+9·5770	+9·5745	+9·5719	+9·5691	+9·5662	+9 5631	+9·5600	+9·5566	+9·5534	+9·5499
	Log. S'	+9·9665	+9·9669	+9·9673	+9·9677	+9·9682	+9·9687	+9·9692	+9·9697	+9·9702	+9·9707
94°	Log. P'	+9·9742	+9·9752	+9·9763	+9·9774	+9·9785	+9·9797	+9·9808	+9·9820	+9·9831	+9·9843
	Log. Q'	−9·5870	−9·5851	−9·5831	−9·5809	−9·5787	−9·5764	−9·5739	−9·5712	−9·5685	−9·5657
	Log. R'	+9·5771	+9·5745	+9·5719	+9·5691	+9·5662	+9·5631	+9·5600	+9·5566	+9·5533	+9·5497
	Log. S'	+9·9664	+9·9668	+9·9672	+9·9676	+9·9681	+9·9686	+9·9691	+9·9696	+9·9701	+9·9706
95°	Log. P'	+9·9750	+9·9761	+9·9772	+9·9783	+9 9795	+9·9807	+9·9819	+9·9831	+9 9844	+9·9857
	Log. Q'	−9·5891	−9·5872	−9·5852	−9·5831	−9·5809	−9·5786	−9·5761	−9·5736	−9·5709	−9·5682
	Log. R'	+9·5771	+9·5745	+9·5718	+9·5690	+9·5661	+9·5631	+9·5599	+9·5566	+9·5533	+9·5497
	Log. S'	+9·9663	+9·9667	+9·9671	+9·9675	+9·9680	+9·9685	+9·9690	+9·9695	+9·9700	+9·9705
96°	Log. P'	+9·9758	+9·9769	+9·9780	+9·9792	+9·9804	+9·9817	+9·9830	+9·9843	+9·9856	+9·9869
	Log. Q'	−9·5915	−9·5896	−9·5876	−9·5855	−9·5833	−9·5810	−9·5787	−9·5762	−9·5736	−9·5709
	Log. R'	+9·5771	+9·5745	+9·5718	+9·5690	+9·5661	+9·5631	+9·5599	+9·5566	+9·5532	+9·5497
	Log. S'	+9·9662	+9·9666	+9·9671	+9·9675	+9·9680	+9·9685	+9·9690	+9·9695	+9·9700	+9·9705
		200°	201°	202°	203°	204°	205°	206°	207°	208°	209°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{ Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.
{ Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.

Longitude.

210°	211°	212°	213°	214°	215°	216°	217°	218°	219°			
+9·9709	+9·9717	+9·9725	+9·9734	+9·9743	+9·9752	+9·9762	+9·9771	+9·9781	+9·9791	Log. P'	84°	Ecliptic North Polar Distance.
−9·5508	−9·5472	−9·5434	−9·5394	−9·5353	−9·5310	−9·5265	−9·5218	−9·5169	−9·5118	Log. Q'		
+9·5461	+9·5421	+9·5382	+9·5338	+9·5295	+9·5247	+9·5200	+9·5149	+9·5097	+9·5043	Log. R'		
+9·9710	+9·9715	+9·9721	+9·9727	+9·9733	+9·9739	+9·9745	+9·9751	+9·9757	+9·9763	Log. S'		
+9·9725	+9·9733	+9·9742	+9·9751	+9·9761	+9·9770	+9·9780	+9·9790	+9·9800	+9·9810	Log. P'	85°	
−9·5509	−9·5473	−9·5436	−9·5397	−9·5356	−9·5313	−9·5268	−9·5222	−9·5174	−9·5124	Log. Q'		
+9·5461	+9·5421	+9·5382	+9·5338	+9·5295	+9·5247	+9·5200	+9·5149	+9·5097	+9·5043	Log. R'		
+9·9711	+9·9716	+9·9722	+9·9727	+9·9733	+9·9739	+9·9745	+9·9751	+9·9757	+9·9763	Log. S'		
+9·9741	+9·9750	+9·9759	+9·9768	+9·9778	+9·9788	+9·9798	+9·9808	+9·9819	+9·9830	Log. P'	86°	
−9·5512	−9·5477	−9·5440	−9·5401	−9·5361	−9·5318	−9·5274	−9·5229	−9·5181	−9·5132	Log. Q'		
+9·5461	+9·5421	+9·5382	+9·5338	+9·5295	+9·5247	+9·5200	+9·5150	+9·5098	+9·5044	Log. R'		
+9·9712	+9·9717	+9·9723	+9·9728	+9·9734	+9·9740	+9·9746	+9·9752	+9·9758	+9·9764	Log. S'		
+9·9757	+9·9766	+9·9776	+9·9785	+9·9795	+9·9805	+9·9816	+9·9827	+9·9838	+9·9849	Log. P'	87°	
−9·5518	−9·5484	−9·5447	−9·5408	−9·5368	−9·5326	−9·5282	−9·5238	−9·5191	−9·5142	Log. Q'		
+9·5462	+9·5421	+9·5382	+9·5339	+9·5295	+9·5247	+9·5200	+9·5151	+9·5099	+9·5045	Log. R'		
+9·9712	+9·9717	+9·9723	+9·9728	+9·9734	+9·9740	+9·9746	+9·9752	+9·9758	+9·9764	Log. S'		
+9·9772	+9·9782	+9·9792	+9·9802	+9·9812	+9·9823	+9·9834	+9·9846	+9·9858	+9·9869	Log. P'	88°	
−9·5527	−9·5492	−9·5456	−9·5418	−9·5378	−9·5336	−9·5293	−9·5249	−9·5203	−9·5155	Log. Q'		
+9·5462	+9·5421	+9·5382	+9·5340	+9·5295	+9·5248	+9·5200	+9·5151	+9·5099	+9·5045	Log. R'		
+9·9713	+9·9718	+9·9724	+9·9729	+9·9735	+9·9741	+9·9747	+9·9753	+9·9759	+9·9765	Log. S'		
+9·9787	+9·9797	+9·9808	+9·9819	+9·9830	+9·9841	+9·9852	+9·9864	+9·9876	+9·9888	Log. P'	89°	
−9·5538	−9·5504	−9·5468	−9·5428	−9·5390	−9·5349	−9·5306	−9·5263	−9·5217	−9·5169	Log. Q'		
+9·5462	+9·5421	+9·5382	+9·5340	+9·5295	+9·5248	+9·5200	+9·5151	+9·5099	+9·5045	Log. R'		
+9·9713	+9·9719	+9·9724	+9·9729	+9·9735	+9·9741	+9·9747	+9·9753	+9·9759	+9·9765	Log. S'		
+9·9801	+9·9812	+9·9823	+9·9834	+9·9846	+9·9857	+9·9869	+9·9881	+9·9894	+9·9906	Log. P'	90°	
−9·5550	−9·5516	−9·5481	−9·5444	−9·5405	−9·5364	−9·5322	−9·5279	−9·5234	−9·5187	Log. Q'		
+9·5462	+9·5421	+9·5382	+9·5340	+9·5295	+9·5248	+9·5200	+9·5151	+9·5099	+9·5045	Log. R'		
+9·9714	+9·9719	+9·9725	+9·9730	+9·9736	+9·9741	+9·9747	+9·9753	+9·9759	+9·9765	Log. S'		
+9·9814	+9·9826	+9·9838	+9·9850	+9·9862	+9·9874	+9·9886	+9·9899	+9·9912	+9·9925	Log. P'	91°	
−9·5566	−9·5533	−9·5498	−9·5461	−9·5423	−9·5383	−9·5341	−9·5299	−9·5254	−9·5207	Log. Q'		
+9·5462	+9·5421	+9·5382	+9·5340	+9·5295	+9·5248	+9·5200	+9·5151	+9·5099	+9·5045	Log. R'		
+9·9713	+9·9719	+9·9724	+9·9729	+9·9735	+9·9741	+9·9747	+9·9753	+9·9759	+9·9765	Log. S'		
+9·9829	+9·9841	+9·9853	+9·9865	+9·9878	+9·9890	+9·9903	+9·9916	+9·9930	+9·9943	Log. P'	92°	
−9·5584	−9·5551	−9·5517	−9·5481	−9·5443	−9·5403	−9·5362	−9·5320	−9·5276	−9·5229	Log. Q'		
+9·5462	+9·5421	+9·5382	+9·5340	+9·5295	+9·5248	+9·5200	+9·5151	+9·5099	+9·5045	Log. R'		
+9·9713	+9·9718	+9·9724	+9·9729	+9·9735	+9·9741	+9·9747	+9·9753	+9·9759	+9·9765	Log. S'		
+9·9843	+9·9855	+9·9868	+9·9881	+9·9894	+9·9907	+9·9920	+9·9934	+9·9948	+9·9962	Log. P'	93°	
−9·5605	−9·5573	−9·5539	−9·5503	−9·5466	−9·5427	−9·5386	−9·5344	−9·5300	−9·5254	Log. Q'		
+9·5462	+9·5421	+9·5382	+9·5339	+9·5295	+9·5247	+9·5200	+9·5151	+9·5099	+9·5045	Log. R'		
+9·9712	+9·9717	+9·9723	+9·9728	+9·9734	+9·9740	+9·9746	+9·9752	+9·9758	+9·9764	Log. S'		
+9·9856	+9·9869	+9·9882	+9·9895	+9·9909	+9·9923	+9·9937	+9·9951	+9·9965	+9·9979	Log. P'	94°	
−9·5628	−9·5596	−9·5563	−9·5528	−9·5491	−9·5452	−9·5412	−9·5370	−9·5326	−9·5281	Log. Q'		
+9·5461	+9·5421	+9·5382	+9·5339	+9·5295	+9·5247	+9·5200	+9·5150	+9·5098	+9·5044	Log. R'		
+9·9712	+9·9717	+9·9723	+9·9728	+9·9734	+9·9740	+9·9746	+9·9752	+9·9758	+9·9764	Log. S'		
+9·9869	+9·9883	+9·9896	+9·9910	+9·9925	+9·9939	+9·9954	+9·9968	+9·9983	+9·9998	Log. P'	95°	
−9·5653	−9·5623	−9·5590	−9·5555	−9·5519	−9·5481	−9·5441	−9·5400	−9·5356	−9·5310	Log. Q'		
+9·5461	+9·5421	+9·5382	+9·5338	+9·5295	+9·5247	+9·5200	+9·5149	+9·5097	+9·5043	Log. R'		
+9·9711	+9·9716	+9·9722	+9·9727	+9·9733	+9·9739	+9·9745	+9·9751	+9·9757	+9·9763	Log. S'		
+9·9882	+9·9896	+9·9910	+9·9925	+9·9940	+9·9955	+9·9970	+9·9985	+0·0000	+0·0015	Log. P'	96°	
−9·5681	−9·5652	−9·5619	−9·5585	−9·5550	−9·5513	−9·5473	−9·5432	−9·5389	−9·5343	Log. Q'		
+9·5461	+9·5421	+9·5382	+9·5338	+9·5295	+9·5247	+9·5200	+9·5149	+9·5097	+9·5043	Log. R'		
+9·9710	+9·9715	+9·9721	+9·9727	+9·9733	+9·9739	+9·9745	+9·9751	+9·9757	+9·9763	Log. S'		
210°	211°	212°	213°	214°	215°	216°	217°	218°	219°			

Longitude.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.}
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.}

Ecliptic North Polar Distance.

		Longitude. 220°	221°	222°	223°	224°	225°	226°	227°	228°	229°
84°	Log. P'	+9·9801	+9·9811	+9·9822	+9·9832	+9·9843	+9·9853	+9·9864	+9·9874	+9·9885	+9·9896
	Log. Q'	−9·5066	−9·5012	−9·4956	−9·4897	−9·4836	−9·4773	−9·4707	−9·4638	−9·4565	−9·4489
	Log. R'	+9·4987	+9·4930	+9·4870	+9·4807	+9·4741	+9·4674	+9·4604	+9·4531	+9·4454	+9·4374
	Log. S'	+9·9770	+9·9776	+9·9783	+9·9789	+9·9796	+9·9802	+9·9809	+9·9815	+9·9822	+9·9829
85°	Log. P'	+9·9821	+9·9831	+9·9842	+9·9853	+9·9864	+9·9875	+9·9887	+9·9898	+9·9909	+9·9920
	Log. Q'	−9·5072	−9·5019	−9·4963	−9·4904	−9·4843	−9·4780	−9·4714	−9·4645	−9·4573	−9·4498
	Log. R'	+9·4988	+9·4930	+9·4870	+9·4807	+9·4741	+9·4674	+9·4604	+9·4531	+9·4454	+9·4374
	Log. S'	+9·9770	+9·9776	+9·9783	+9·9789	+9·9796	+9·9802	+9·9809	+9·9815	+9·9822	+9·9829
86°	Log. P'	+9·9841	+9·9852	+9·9863	+9·9874	+9·9885	+9·9897	+9·9909	+9·9920	+9·9932	+9·9943
	Log. Q'	−9·5080	−9·5027	−9·4971	−9·4913	−9·4852	−9·4790	−9·4724	−9·4656	−9·4584	−9·4510
	Log. R'	+9·4988	+9·4930	+9·4870	+9·4807	+9·4742	+9·4674	+9·4604	+9·4530	+9·4454	+9·4374
	Log. S'	+9·9771	+9·9777	+9·9784	+9·9790	+9·9797	+9·9803	+9·9810	+9·9816	+9·9823	+9·9830
87°	Log. P'	+9·9861	+9·9872	+9·9884	+9·9895	+9·9907	+9·9919	+9·9931	+9·9943	+9·9955	+9·9967
	Log. Q'	−9·5091	−9·5038	−9·4983	−9·4925	−9·4864	−9·4802	−9·4737	−9·4668	−9·4597	−9·4523
	Log. R'	+9·4989	+9·4931	+9·4871	+9·4808	+9·4742	+9·4674	+9·4603	+9·4529	+9·4453	+9·4375
	Log. S'	+9·9771	+9·9777	+9·9784	+9·9790	+9·9797	+9·9803	+9·9810	+9·9816	+9·9823	+9·9830
88°	Log. P'	+9·9881	+9·9892	+9·9904	+9·9916	+9·9928	+9·9940	+9·9953	+9·9965	+9·9978	+9·9990
	Log. Q'	−9·5104	−9·5051	−9·4996	−9·4936	−9·4878	−9·4817	−9·4752	−9·4684	−9·4613	−9·4540
	Log. R'	+9·4989	+9·4931	+9·4871	+9·4808	+9·4742	+9·4674	+9·4603	+9·4529	+9·4453	+9·4375
	Log. S'	+9·9772	+9·9778	+9·9785	+9·9791	+9·9798	+9·9804	+9·9811	+9·9817	+9·9824	+9·9830
89°	Log. P'	+9·9900	+9·9912	+9·9924	+9·9936	+9·9949	+9·9962	+9·9975	+9·9988	+0·0001	+0·0013
	Log. Q'	−9·5119	−9·5067	−9·5012	−9·4955	−9·4895	−9·4834	−9·4770	−9·4702	−9·4632	−9·4559
	Log. R'	+9·4989	+9·4931	+9·4871	+9·4808	+9·4742	+9·4674	+9·4603	+9·4529	+9·4453	+9·4375
	Log. S'	+9·9772	+9·9778	+9·9785	+9·9791	+9·9798	+9·9804	+9·9811	+9·9817	+9·9824	+9·9830
90°	Log. P'	+9·9919	+9·9931	+9·9944	+9·9957	+9·9970	+9·9984	+9·9997	+0·0010	+0·0023	+0·0036
	Log. Q'	−9·5137	−9·5085	−9·5031	−9·4974	−9·4915	−9·4854	−9·4790	−9·4723	−9·4653	−9·4581
	Log. R'	+9·4989	+9·4931	+9·4871	+9·4808	+9·4742	+9·4674	+9·4603	+9·4529	+9·4453	+9·4375
	Log. S'	+9·9772	+9·9778	+9·9785	+9·9791	+9·9798	+9·9804	+9·9811	+9·9817	+9·9824	+9·9830
91°	Log. P'	+9·9938	+9·9951	+9·9964	+9·9977	+9·9991	+0·0005	+0·0019	+0·0033	+0·0046	+0·0059
	Log. Q'	−9·5157	−9·5106	−9·5052	−9·4996	−9·4937	−9·4877	−9·4813	−9·4746	−9·4677	−9·4605
	Log. R'	+9·4989	+9·4931	+9·4871	+9·4808	+9·4742	+9·4674	+9·4603	+9·4529	+9·4453	+9·4375
	Log. S'	+9·9772	+9·9778	+9·9785	+9·9791	+9·9798	+9·9804	+9·9811	+9·9817	+9·9824	+9·9830
92°	Log. P'	+9·9957	+9·9970	+9·9984	+9·9998	+0·0012	+0·0026	+0·0040	+0·0054	+0·0068	+0·0082
	Log. Q'	−9·5180	−9·5129	−9·5076	−9·5020	−9·4962	−9·4901	−9·4838	−9·4772	−9·4703	−9·4632
	Log. R'	+9·4989	+9·4931	+9·4871	+9·4808	+9·4742	+9·4674	+9·4603	+9·4529	+9·4453	+9·4375
	Log. S'	+9·9772	+9·9778	+9·9785	+9·9791	+9·9798	+9·9804	+9·9811	+9·9817	+9·9824	+9·9830
93°	Log. P'	+9·9976	+9·9991	+0·0005	+0·0019	+0·0033	+0·0047	+0·0062	+0·0076	+0·0091	+0·0106
	Log. Q'	−9·5205	−9·5155	−9·5102	−9·5046	−9·4989	−9·4930	−9·4867	−9·4801	−9·4733	−9·4662
	Log. R'	+9·4989	+9·4931	+9·4871	+9·4808	+9·4742	+9·4674	+9·4603	+9·4529	+9·4453	+9·4375
	Log. S'	+9·9771	+9·9777	+9·9784	+9·9790	+9·9797	+9·9803	+9·9810	+9·9816	+9·9823	+9·9830
94°	Log. P'	+9·9994	+0·0008	+0·0023	+0·0038	+0·0053	+0·0068	+0·0083	+0·0098	+0·0113	+0·0128
	Log. Q'	−9·5233	−9·5183	−9·5131	−9·5076	−9·5019	−9·4960	−9·4898	−9·4833	−9·4765	−9·4694
	Log. R'	+9·4988	+9·4930	+9·4870	+9·4807	+9·4742	+9·4674	+9·4604	+9·4530	+9·4454	+9·4374
	Log. S'	+9·9771	+9·9777	+9·9784	+9·9790	+9·9797	+9·9803	+9·9810	+9·9816	+9·9823	+9·9830
95°	Log. P'	+0·0013	+0·0029	+0·0044	+0·0059	+0·0074	+0·0089	+0·0104	+0·0119	+0·0135	+0·0150
	Log. Q'	−9·5263	−9·5214	−9·5163	−9·5109	−9·5052	−9·4994	−9·4932	−9·4868	−9·4800	−9·4729
	Log. R'	+9·4988	+9·4930	+9·4870	+9·4807	+9·4741	+9·4674	+9·4604	+9·4531	+9·4454	+9·4374
	Log. S'	+9·9770	+9·9776	+9·9783	+9·9789	+9·9796	+9·9802	+9·9809	+9·9815	+9·9822	+9·9829
96°	Log. P'	+0·0031	+0·0047	+0·0063	+0·0078	+0·0094	+0·0110	+0·0126	+0·0141	+0·0157	+0·0174
	Log. Q'	−9·5296	−9·5248	−9·5197	−9·5143	−9·5087	−9·5030	−9·4969	−9·4905	−9·4837	−9·4767
	Log. R'	+9·4987	+9·4930	+9·4870	+9·4807	+9·4741	+9·4674	+9·4604	+9·4531	+9·4454	+9·4374
	Log. S'	+9·9770	+9·9776	+9·9783	+9·9789	+9·9796	+9·9802	+9·9809	+9·9815	+9·9822	+9·9829
		220°	221°	222°	223°	224°	225°	226°	227°	228°	229°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{ Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D. }
{ Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D. }

Longitude.

230°	231°	232°	233°	234°	235°	236°	237°	238°	239°			
+9 ·9907	+9 ·9918	+9 ·9929	+9 ·9939	+9 ·9950	+9 ·9960	+9 ·9971	+9 ·9982	+9 ·9992	+0 ·0002	Log. P'	84°	Ecliptic North Polar Distance.
−9 ·4410	−9 ·4327	−9 ·4242	−9 ·4156	−9 ·4066	−9 ·3971	−9 ·3871	−9 ·3766	−9 ·3656	−9 ·3541	Log. Q'		
+9 ·4291	+9 ·4204	+9 ·4115	+9 ·4025	+9 ·3930	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3501	+9 ·3383	Log. R'		
+9 ·9836	+9 ·9842	+9 ·9849	+9 ·9855	+9 ·9862	+9 ·9868	+9 ·9874	+9 ·9880	+9 ·9887	+9 ·9893	Log. S'		
+9 ·9931	+9 ·9942	+9 ·9954	+9 ·9965	+9 ·9976	+9 ·9986	+9 ·9997	+0 ·0007	+0 ·0018	+0 ·0028	Log. P'	85°	
−9 ·4419	−9 ·4337	−9 ·4253	−9 ·4167	−9 ·4077	−9 ·3982	−9 ·3882	−9 ·3776	−9 ·3666	−9 ·3552	Log. Q'		
+9 ·4291	+9 ·4204	+9 ·4116	+9 ·4025	+9 ·3930	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3501	+9 ·3383	Log. R'		
+9 ·9836	+9 ·9843	+9 ·9849	+9 ·9855	+9 ·9862	+9 ·9868	+9 ·9874	+9 ·9881	+9 ·9887	+9 ·9893	Log. S'		
+9 ·9955	+9 ·9966	+9 ·9978	+9 ·9989	+0 ·0001	+0 ·0012	+0 ·0023	+0 ·0034	+0 ·0045	+0 ·0055	Log. P'	86°	
−9 ·4432	−9 ·4350	−9 ·4266	−9 ·4181	−9 ·4091	−9 ·3996	−9 ·3896	−9 ·3791	−9 ·3681	−9 ·3566	Log. Q'		
+9 ·4292	+9 ·4205	+9 ·4117	+9 ·4026	+9 ·3931	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3501	+9 ·3382	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9849	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9875	+9 ·9881	+9 ·9887	+9 ·9893	Log. S'		
+9 ·9979	+9 ·9990	+0 ·0002	+0 ·0014	+0 ·0026	+0 ·0038	+0 ·0049	+0 ·0060	+0 ·0071	+0 ·0082	Log. P'	87°	
−9 ·4446	−9 ·4365	−9 ·4282	−9 ·4197	−9 ·4107	−9 ·4012	−9 ·3912	−9 ·3808	−9 ·3698	−9 ·3583	Log. Q'		
+9 ·4293	+9 ·4206	+9 ·4118	+9 ·4027	+9 ·3932	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3501	+9 ·3382	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9875	+9 ·9882	+9 ·9888	+9 ·9894	Log. S'		
+0 ·0002	+0 ·0014	+0 ·0026	+0 ·0039	+0 ·0051	+0 ·0063	+0 ·0075	+0 ·0087	+0 ·0098	+0 ·0109	Log. P'	88°	
−9 ·4464	−9 ·4383	−9 ·4300	−9 ·4215	−9 ·4125	−9 ·4030	−9 ·3931	−9 ·3827	−9 ·3718	−9 ·3603	Log. Q'		
+9 ·4293	+9 ·4206	+9 ·4118	+9 ·4027	+9 ·3932	+9 ·3831	+9 ·3726	+9 ·3615	+9 ·3501	+9 ·3381	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9876	+9 ·9882	+9 ·9888	+9 ·9894	Log. S'		
+0 ·0026	+0 ·0039	+0 ·0051	+0 ·0064	+0 ·0077	+0 ·0089	+0 ·0101	+0 ·0112	+0 ·0124	+0 ·0136	Log. P'	89°	
−9 ·4483	−9 ·4403	−9 ·4320	−9 ·4235	−9 ·4146	−9 ·4052	−9 ·3953	−9 ·3848	−9 ·3738	−9 ·3625	Log. Q'		
+9 ·4293	+9 ·4207	+9 ·4118	+9 ·4028	+9 ·3932	+9 ·3831	+9 ·3726	+9 ·3615	+9 ·3501	+9 ·3381	Log. R		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9876	+9 ·9882	+9 ·9888	+9 ·9894	Log. S'		
+0 ·0049	+0 ·0062	+0 ·0075	+0 ·0088	+0 ·0101	+0 ·0114	+0 ·0127	+0 ·0139	+0 ·0151	+0 ·0162	Log. P'	90°	
−9 ·4505	−9 ·4425	−9 ·4343	−9 ·4259	−9 ·4170	−9 ·4076	−9 ·3977	−9 ·3874	−9 ·3765	−9 ·3651	Log. Q'		
+9 ·4293	+9 ·4207	+9 ·4118	+9 ·4028	+9 ·3932	+9 ·3831	+9 ·3726	+9 ·3615	+9 ·3501	+9 ·3381	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9876	+9 ·9882	+9 ·9888	+9 ·9894	Log. S'		
+0 ·0072	+0 ·0086	+0 ·0099	+0 ·0113	+0 ·0126	+0 ·0140	+0 ·0153	+0 ·0166	+0 ·0178	+0 ·0190	Log. P'	91°	
−9 ·4530	−9 ·4451	−9 ·4369	−9 ·4285	−9 ·4196	−9 ·4103	−9 ·4004	−9 ·3900	−9 ·3791	−9 ·3679	Log. Q'		
+9 ·4293	+9 ·4206	+9 ·4118	+9 ·4028	+9 ·3932	+9 ·3831	+9 ·3726	+9 ·3615	+9 ·3501	+9 ·3381	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9876	+9 ·9882	+9 ·9888	+9 ·9894	Log. S'		
+0 ·0096	+0 ·0109	+0 ·0123	+0 ·0137	+0 ·0151	+0 ·0165	+0 ·0178	+0 ·0191	+0 ·0204	+0 ·0217	Log. P'	92°	
−9 ·4557	−9 ·4479	−9 ·4397	−9 ·4313	−9 ·4225	−9 ·4132	−9 ·4034	−9 ·3930	−9 ·3822	−9 ·3710	Log. Q'		
+9 ·4293	+9 ·4206	+9 ·4118	+9 ·4027	+9 ·3932	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3501	+9 ·3381	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9876	+9 ·9882	+9 ·9888	+9 ·9894	Log. S'		
+0 ·0120	+0 ·0134	+0 ·0148	+0 ·0162	+0 ·0177	+0 ·0190	+0 ·0204	+0 ·0218	+0 ·0231	+0 ·0243	Log. P'	93°	
−9 ·4588	−9 ·4509	−9 ·4428	−9 ·4345	−9 ·4257	−9 ·4164	−9 ·4067	−9 ·3965	−9 ·3856	−9 ·3744	Log. Q'		
+9 ·4293	+9 ·4205	+9 ·4118	+9 ·4026	+9 ·3932	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3502	+9 ·3382	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9875	+9 ·9882	+9 ·9888	+9 ·9894	Log. S'		
+0 ·0143	+0 ·0157	+0 ·0172	+0 ·0187	+0 ·0202	+0 ·0216	+0 ·0230	+0 ·0244	+0 ·0257	+0 ·0271	Log. P'	94°	
−9 ·4620	−9 ·4542	−9 ·4461	−9 ·4378	−9 ·4291	−9 ·4199	−9 ·4102	−9 ·4001	−9 ·3894	−9 ·3782	Log. Q'		
+9 ·4292	+9 ·4205	+9 ·4117	+9 ·4026	+9 ·3931	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3502	+9 ·3383	Log. R'		
+9 ·9837	+9 ·9844	+9 ·9850	+9 ·9857	+9 ·9863	+9 ·9869	+9 ·9875	+9 ·9881	+9 ·9887	+9 ·9893	Log. S'		
+0 ·0166	+0 ·0181	+0 ·0197	+0 ·0212	+0 ·0227	+0 ·0241	+0 ·0256	+0 ·0270	+0 ·0284	+0 ·0298	Log. P'	95°	
−9 ·4655	−9 ·4577	−9 ·4497	−9 ·4415	−9 ·4328	−9 ·4236	−9 ·4140	−9 ·4039	−9 ·3933	−9 ·3822	Log. Q'		
+9 ·4291	+9 ·4204	+9 ·4116	+9 ·4025	+9 ·3930	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3502	+9 ·3383	Log. R'		
+9 ·9836	+9 ·9843	+9 ·9849	+9 ·9855	+9 ·9862	+9 ·9868	+9 ·9874	+9 ·9881	+9 ·9887	+9 ·9893	Log. S'		
+0 ·0190	+0 ·0206	+0 ·0221	+0 ·0236	+0 ·0251	+0 ·0266	+0 ·0281	+0 ·0296	+0 ·0311	+0 ·0326	Log. P'	96°	
−9 ·4693	−9 ·4615	−9 ·4535	−9 ·4454	−9 ·4368	−9 ·4277	−9 ·4181	−9 ·4081	−9 ·3975	−9 ·3864	Log. Q'		
+9 ·4291	+9 ·4204	+9 ·4115	+9 ·4025	+9 ·3930	+9 ·3831	+9 ·3726	+9 ·3616	+9 ·3501	+9 ·3383	Log. R'		
+9 ·9836	+9 ·9842	+9 ·9849	+9 ·9855	+9 ·9862	+9 ·9868	+9 ·9874	+9 ·9880	+9 ·9887	+9 ·9893	Log. S'		
230°	231°	232°	233°	234°	235°	236°	237°	238°	239°			

Longitude.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

{Change of R.A. in arc = P' × change of Longitude + Q' × change of Ec. N.P.D.}
{Change of N.P.D. = R' × change of Longitude + S' × change of Ec. N.P.D.}

Ecliptic North Polar Distance.

		Longitude. 240°	241°	242°	243°	244°	245°	246°	247°	248°	249°
84°	Log. P'	+0·0012	+0·0022	+0·0031	+0·0041	+0·0050	+0·0059	+0·0068	+0·0077	+0·0085	+0·0093
	Log. Q'	−9·3421	−9·3296	−9·3168	−9·3032	−9·2892	−9·2742	−9·2584	−9·2418	−9·2243	−9·2057
	Log. R'	+9·3260	+9·3135	+9·3002	+9·2863	+9·2716	+9·2562	+9·2400	+9·2231	+9·2053	+9·1868
	Log. S'	+9·9899	+9·9905	+9·9911	+9·9916	+9·9922	+9·9927	+9·9933	+9·9938	+9·9943	+9·9947
85°	Log. P'	+0·0039	+0·0049	+0·0060	+0·0070	+0·0079	+0·0089	+0·0098	+0·0107	+0·0115	+0·0123
	Log. Q'	−9·3433	−9·3310	−9·3181	−9·3045	−9·2903	−9·2753	−9·2596	−9·2430	−9·2256	−9·2071
	Log. R'	+9·3260	+9·3134	+9·3001	+9·2862	+9·2715	+9·2561	+9·2399	+9·2230	+9·2052	+9·1868
	Log. S'	+9·9899	+9·9905	+9·9911	+9·9917	+9·9922	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
86°	Log. P'	+0·0066	+0·0076	+0·0087	+0·0097	+0·0107	+0·0116	+0·0126	+0·0135	+0·0144	+0·0152
	Log. Q'	−9·3447	−9·3324	−9·3195	−9·3060	−9·2918	−9·2767	−9·2610	−9·2445	−9·2272	−9·2087
	Log. R'	+9·3259	+9·3133	+9·3000	+9·2861	+9·2714	+9·2559	+9·2398	+9·2229	+9·2052	+9·1867
	Log. S'	+9·9899	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
87°	Log. P'	+0·0093	+0·0104	+0·0115	+0·0125	+0·0135	+0·0146	+0·0155	+0·0164	+0·0173	+0·0182
	Log. Q'	−9·3464	−9·3341	−9·3212	−9·3077	−9·2936	−9·2785	−9·2629	−9·2465	−9·2291	−9·2109
	Log. R'	+9·3259	+9·3132	+9·2999	+9·2860	+9·2712	+9·2558	+9·2397	+9·2228	+9·2051	+9·1865
	Log. S'	+9·9900	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
88°	Log. P'	+0·0120	+9·0131	+0·0142	+0·0153	+0·0163	+0·0173	+0·0183	+0·0193	+0·0202	+0·0211
	Log. Q'	−9·3484	−9·3363	−9·3235	−9·3098	−9·2957	−9·2808	−9·2651	−9·2485	−9·2313	−9·2129
	Log. R'	+9·3258	+9·3131	+9·2998	+9·2858	+9·2711	+9·2557	+9·2397	+9·2228	+9·2050	+9·1863
	Log. S'	+9·9900	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
89°	Log. P'	+0·0147	+0·0159	+0·0170	+0·0181	+0·0192	+0·0203	+0·0213	+0·0223	+0·0232	+0·0241
	Log. Q'	−9·3507	−9·3385	−9·3257	−9·3122	−9·2981	−9·2833	−9·2679	−9·2514	−9·2339	−9·2156
	Log. R'	+9·3258	+9·3130	+9·2997	+9·2857	+9·2711	+9·2556	+9·2396	+9·2227	+9·2050	+9·1862
	Log. S'	+9·9900	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
90°	Log. P'	+0·0174	+0·0186	+0·0198	+0·0210	+0·0221	+0·0232	+0·0242	+0·0252	+0·0261	+0·0271
	Log. Q'	−9·3533	−9·3410	−9·3284	−9·3149	−9·3009	−9·2860	−9·2704	−9·2541	−9·2367	−9·2183
	Log. R'	+9·3258	+9·3128	+9·2995	+9·2856	+9·2710	+9·2555	+9·2395	+9·2227	+9·2049	+9·1861
	Log. S'	+9·9900	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
91°	Log. P'	+0·0202	+0·0215	+0·0227	+0·0239	+0·0250	+0·0261	+0·0271	+0·0281	+0·0291	+0·0301
	Log. Q'	−9·3562	−9·3440	−9·3312	−9·3179	−9·3039	−9·2891	−9·2737	−9·2572	−9·2399	−9·2214
	Log. R'	+9·3258	+9·3129	+9·2997	+9·2857	+9·2711	+9·2556	+9·2398	+9·2227	+9·2050	+9·1862
	Log. S'	+9·9900	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
92°	Log. P'	+0·0229	+0·0242	+0·0254	+0·0266	+0·0278	+0·0289	+0·0300	+0·0310	+0·0320	+0·0330
	Log. Q'	−9·3593	−9·3473	−9·3347	−9·3214	−9·3072	−9·2925	−9·2769	−9·2605	−9·2433	−9·2251
	Log. R'	+9·3258	+9·3130	+9·2997	+9·2859	+9·2711	+9·2558	+9·2398	+9·2228	+9·2050	+9·1863
	Log. S'	+9·9900	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
93°	Log. P'	+0·0257	+0·0270	+0·0283	+0·0295	+0·0307	+0·0319	+0·0330	+0·0341	+0·0351	+0·0361
	Log. Q'	−9·3628	−9·3508	−9·3381	−9·3249	−9·3109	−9·2962	−9·2808	−9·2646	−9·2471	−9·2289
	Log. R'	+9·3259	+9·3132	+9·2999	+9·2860	+9·2712	+9·2559	+9·2398	+9·2229	+9·2051	+9·1865
	Log. S'	+9·9900	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
94°	Log. P'	+0·0284	+0·0297	+0·0311	+0·0323	+0·0336	+0·0348	+0·0360	+0·0371	+0·0382	+0·0393
	Log. Q'	−9·3665	−9·3547	−9·3420	−9·3288	−9·3148	−9·3002	−9·2847	−9·2683	−9·2511	−9·2330
	Log. R'	+9·3259	+9·3133	+9·2999	+9·2861	+9·2714	+9·2560	+9·2398	+9·2229	+9·2052	+9·1866
	Log. S'	+9·9899	+9·9906	+9·9912	+9·9918	+9·9923	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
95°	Log. P'	+0·0312	+0·0326	+0·0339	+0·0352	+0·0365	+0·0378	+0·0390	+0·0402	+0·0413	+0·0424
	Log. Q'	−9·3706	−9·3585	−9·3458	−9·3326	−9·3190	−9·3043	−9·2889	−9·2728	−9·2555	−9·2370
	Log. R'	+9·3260	+9·3134	+9·3002	+9·2862	+9·2715	+9·2561	+9·2400	+9·2230	+9·2052	+9·1867
	Log. S'	+9·9899	+9·9905	+9·9911	+9·9917	+9·9922	+9·9928	+9·9933	+9·9938	+9·9943	+9·9948
96°	Log. P'	+0·0340	+0·0354	+0·0367	+0·0380	+0·0393	+0·0406	+0·0419	+0·0431	+0·0443	+0·0455
	Log. Q'	−9·3749	−9·3630	−9·3504	−9·3373	−9·3235	−9·3088	−9·2934	−9·2772	−9·2601	−9·2420
	Log. R'	+9·3260	+9·3135	+9·3002	+9·2863	+9·2716	+9·2562	+9·2400	+9·2231	+9·2053	+9·1868
	Log. S'	+9·9899	+9·9905	+9·9911	+9·9916	+9·9922	+9·9927	+9·9933	+9·9938	+9·9943	+9·9947
		240°	241°	242°	243°	244°	245°	246°	247°	248°	249°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.}
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.}

Longitude.

250°	251°	252°	253°	254°	255°	256°	257°	258°	259°		
+0·0101	+0·0108	+0·0115	+0·0122	+0·0129	+0·0135	+0·0141	+0·0146	+0·0151	+0·0156	Log. P'	84°
−9·1864	−9·1658	−9·1439	−9·1202	−9·0952	−9·0682	−9·0393	−9·0077	−8·9736	−8·9365	Log. Q'	
+9·1670	+9·1461	+9·1237	+9·1000	+9·0745	+9·0473	+9·0180	+8·9859	+8·9509	+8·9138	Log. R'	
+9·9952	+9·9956	+9·9961	+9·9965	+9·9969	+9·9972	+9·9976	+9·9980	+9·9983	+9·9986	Log. S'	
+0·0131	+0·0138	+0·0145	+0·0152	+0·0159	+0·0165	+0·0171	+0·0177	+0·0183	+0·0188	Log. P'	85°
−9·1878	−9·1670	−9·1452	−9·1217	−9·0966	−9·0697	−9·0408	−9·0094	−8·9754	−8·9384	Log. Q'	
+9·1668	+9·1460	+9·1235	+9·0999	+9·0743	+9·0472	+9·0179	+8·9859	+8·9514	+8·9139	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9980	+9·9983	+9·9986	Log. S'	
+0·0160	+0·0167	+0·0175	+0·0182	+0·0189	+0·0196	+0·0202	+0·0208	+0·0213	+0·0218	Log. P'	86°
−9·1895	−9·1688	−9·1469	−9·1235	−9·0983	−9·0715	−9·0426	−9·0116	−8·9777	−8·9410	Log. Q'	
+9·1667	+9·1458	+9·1234	+9·0997	+9·0741	+9·0471	+9·0179	+8·9861	+8·9518	+8·9143	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0190	+0·0198	+0·0205	+0·0213	+0·0220	+0·0227	+0·0233	+0·0239	+0·0244	+0·0249	Log. P'	87°
−9·1915	−9·1708	−9·1488	−9·1255	−9·1004	−9·0737	−9·0447	−9·0137	−8·9800	−8·9430	Log. Q'	
+9·1664	+9·1456	+9·1232	+9·0995	+9·0741	+9·0469	+9·0178	+8·9861	+8·9523	+8·9146	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0220	+0·0228	+0·0236	+0·0244	+0·0251	+0·0258	+0·0264	+0·0270	+0·0276	+0·0281	Log. P'	88°
−9·1934	−9·1729	−9·1511	−9·1278	−9·1028	−9·0759	−9·0471	−9·0162	−8·9823	−8·9455	Log. Q'	
+9·1662	+9·1454	+9·1230	+9·0993	+9·0741	+9·0468	+9·0177	+8·9862	+8·9523	+8·9149	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0250	+0·0258	+0·0266	+0·0274	+0·0282	+0·0289	+0·0296	+0·0302	+0·0308	+0·0313	Log. P'	89°
−9·1962	−9·1755	−9·1537	−9·1303	−9·1055	−9·0788	−9·0498	−9·0187	−8·9850	−8·9481	Log. Q'	
+9·1662	+9·1452	+9·1229	+9·0991	+9·0737	+9·0466	+9·0177	+8·9862	+8·9526	+8·9151	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0280	+0·0289	+0·0297	+0·0305	+0·0313	+0·0320	+0·0327	+0·0333	+0·0339	+0·0345	Log. P'	90°
−9·1989	−9·1784	−9·1566	−9·1332	−9·1082	−9·0813	−9·0528	−9·0216	−8·9881	−8·9513	Log. Q'	
+9·1661	+9·1452	+9·1229	+9·0990	+9·0737	+9·0465	+9·0176	+8·9863	+8·9523	+8·9154	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0310	+0·0319	+0·0328	+0·0336	+0·0344	+0·0351	+0·0358	+0·0365	+0·0371	+0·0377	Log. P'	91°
−9·2022	−9·1816	−9·1598	−9·1364	−9·1116	−9·0849	−9·0561	−9·0249	−8·9912	−8·9547	Log. Q'	
+9·1661	+9·1453	+9·1229	+9·0991	+9·0737	+9·0466	+9·0177	+8·9862	+8·9528	+8·9151	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0340	+0·0350	+0·0359	+0·0367	+0·0375	+0·0383	+0·0390	+0·0397	+0·0404	+0·0410	Log. P'	92°
−9·2057	−9·1853	−9·1631	−9·1399	−9·1149	−9·0881	−9·0597	−9·0286	−8·9948	−8·9581	Log. Q'	
+9·1661	+9·1454	+9·1230	+9·0993	+9·0741	+9·0467	+9·0177	+8·9862	+8·9523	+8·9148	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0371	+0·0381	+0·0390	+0·0399	+0·0407	+0·0415	+0·0422	+0·0429	+0·0436	+0·0443	Log. P'	93°
−9·2095	−9·1892	−9·1673	−9·1440	−9·1189	−9·0924	−9·0637	−9·0326	−8·9987	−8·9619	Log. Q'	
+9·1664	+9·1456	+9·1232	+9·0995	+9·0741	+9·0468	+9·0178	+8·9861	+8·9523	+8·9145	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0403	+0·0413	+0·0422	+0·0431	+0·0439	+0·0447	+0·0455	+0·0462	+0·0469	+0·0475	Log. P'	94°
−9·2138	−9·1934	−9·1715	−9·1480	−9·1232	−9·0966	−9·0679	−9·0366	−9·0030	−8·9661	Log. Q'	
+9·1667	+9·1458	+9·1234	+9·0997	+9·0741	+9·0470	+9·0179	+8·9860	+8·9518	+8·9143	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9979	+9·9982	+9·9985	Log. S'	
+0·0435	+0·0445	+0·0454	+0·0463	+0·0472	+0·0480	+0·0488	+0·0495	+0·0502	+0·0509	Log. P'	95°
−9·2177	−9·1976	−9·1761	−9·1529	−9·1281	−9·1014	−9·0725	−9·0414	−9·0075	−8·9708	Log. Q'	
+9·1669	+9·1460	+9·1235	+9·0999	+9·0745	+9·0471	+9·0179	+8·9860	+8·9513	+8·9140	Log. R'	
+9·9952	+9·9957	+9·9961	+9·9965	+9·9969	+9·9973	+9·9976	+9·9980	+9·9983	+9·9986	Log. S'	
+0·0466	+0·0476	+0·0486	+0·0495	+0·0504	+0·0513	+0·0521	+0·0529	+0·0536	+0·0543	Log. P'	96°
−9·2230	−9·2028	−9·1810	−9·1575	−9·1326	−9·1062	−9·0773	−9·0461	−9·0124	−8·9754	Log. Q'	
+9·1670	+9·1461	+9·1237	+9·1000	+9·0745	+9·0473	+9·0180	+8·9859	+8·9509	+8·9138	Log. R'	
+9·9952	+9·9956	+9·9961	+9·9965	+9·9969	+9·9972	+9·9976	+9·9979	+9·9983	+9·9986	Log. S'	
250°	251°	252°	253°	254°	255°	256°	257°	258°	259°		

Longitude.

Ecliptic North Polar Distance.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.}
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.}

Longitude.

Ecliptic North Polar Distance.			260°	261°	262°	263°	264°	265°	266°	267°	268°	269°
	84°	Log. P'	+0·0160	+0·0164	+0·0167	+0·0170	+0·0173	+0·0176	+0·0178	+0·0180	+0·0181	+0·0181
		Log. Q'	−8·8962	−8·8519	−8·8021	−8·7159	−8·6797	−8·6010	−8·5052	−8·3802	−8·2002	−7·8992
		Log. R'	+8·8725	+8·8293	+8·7796	+8·7226	+8·6571	+8·5798	+8·4829	+8·3579	+8·1773	+7·8763
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9995	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	85°	Log. P'	+0·0192	+0·0196	+0·0199	+0·0202	+0·0205	+0·0208	+0·0210	+0·0212	+0·0213	+0·0213
		Log. Q'	−8·8980	−8·8536	−8·8038	−8·7474	−8·6812	−8·6031	−8·5064	−8·3802	−8·2025	−7·9017
		Log. R'	+8·8732	+8·8294	+8·7796	+8·7226	+8·6569	+8·5794	+8·4829	+8·3575	+8·1781	+7·8770
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9995	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	86°	Log. P'	+0·0223	+0·0227	+0·0231	+0·0234	+0·0237	+0·0240	+0·0242	+0·0244	+0·0245	+0·0245
		Log. Q'	−8·9001	−8·8561	−8·8061	−8·7490	−8·6829	−8·6042	−8·5079	−8·3820	−8·2053	−7·9043
		Log. R'	+8·8738	+8·8295	+8·7796	+8·7226	+8·6567	+8·5790	+8·4829	+8·3572	+8·1786	+7·8776
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	87°	Log. P'	+0·0254	+0·0258	+0·0262	+0·0266	+0·0269	+0·0272	+0·0274	+0·0276	+0·0277	+0·0277
		Log. Q'	−8·9024	−8·8579	−8·8082	−8·7513	−8·6851	−8·6064	−8·5105	−8·3838	−8·2080	−7·9070
		Log. R'	+8·8743	+8·8296	+8·7803	+8·7226	+8·6565	+8·5786	+8·4829	+8·3569	+8·1791	+7·8781
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	88°	Log. P'	+0·0286	+0·0290	+0·0294	+0·0298	+0·0301	+0·0304	+0·0306	+0·0308	+0·0309	+0·0309
		Log. Q'	−8·9050	−8·8609	−8·8109	−8·7536	−8·6875	−8·6096	−8·5132	−8·3874	−8·2109	−7·9099
		Log. R'	+8·8746	+8·8297	+8·7796	+8·7226	+8·6564	+8·5783	+8·4814	+8·3566	+8·1794	+7·8784
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	89°	Log. P'	+0·0318	+0·0323	+0·0327	+0·0330	+0·0333	+0·0336	+0·0338	+0·0340	+0·0341	+0·0342
		Log. Q'	−8·9078	−8·8633	−8·8129	−8·7559	−8·6903	−8·6117	−8·5159	−8·3909	−8·2139	−7·9130
		Log. R'	+8·8748	+8·8298	+8·7796	+8·7226	+8·6563	+8·5779	+8·4814	+8·3563	+8·1796	+7·8786
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	90°	Log. P'	+0·0350	+0·0355	+0·0359	+0·0363	+0·0366	+0·0369	+0·0371	+0·0373	+0·0374	+0·0375
		Log. Q'	−8·9109	−8·8669	−8·8169	−8·7597	−8·6934	−8·6160	−8·5198	−8·3945	−8·2171	−7·9162
		Log. R'	+8·8749	+8·8299	+8·7796	+8·7226	+8·6563	+8·5775	+8·4814	+8·3560	+8·1797	+7·8787
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	91°	Log. P'	+0·0382	+0·0387	+0·0392	+0·0396	+0·0399	+0·0402	+0·0404	+0·0406	+0·0407	+0·0408
		Log. Q'	−8·9143	−8·8698	−8·8202	−8·7634	−8·6969	−8·6191	−8·5224	−8·3979	−8·2204	−7·9196
		Log. R'	+8·8748	+8·8298	+8·7796	+8·7226	+8·6563	+8·5779	+8·4814	+8·3563	+8·1796	+7·8786
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	92°	Log. P'	+0·0415	+0·0420	+0·0425	+0·0429	+0·0432	+0·0435	+0·0437	+0·0439	+0·0440	+0·0441
		Log. Q'	−8·9179	−8·8733	−8·8235	−8·7664	−8·7006	−8·6222	−8·5263	−8·4014	−8·2240	−7·9231
		Log. R'	+8·8746	+8·8297	+8·7796	+8·7226	+8·6564	+8·5783	+8·4814	+8·3566	+8·1792	+7·8784
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	93°	Log. P'	+0·0448	+0·0453	+0·0458	+0·0462	+0·0465	+0·0468	+0·0471	+0·0473	+0·0474	+0·0475
		Log. Q'	−8·9218	−8·8774	−8·8274	−8·7709	−8·7048	−8·6263	−8·5302	−8·4048	−8·2277	−7·9268
		Log. R'	+8·8743	+8·8296	+8·7803	+8·7226	+8·6565	+8·5787	+8·4829	+8·3569	+8·1791	+7·8781
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	94°	Log. P'	+0·0481	+0·0486	+0·0491	+0·0495	+0·0499	+0·0502	+0·0505	+0·0507	+0·0508	+0·0509
		Log. Q'	−8·9260	−8·8814	−8·8319	−8·7752	−8·7092	−8·6304	−8·5340	−8·4082	−8·2316	−7·9307
		Log. R'	+8·8738	+8·8295	+8·7796	+8·7226	+8·6567	+8·5790	+8·4829	+8·3572	+8·1786	+7·8776
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9996	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	95°	Log. P'	+0·0515	+0·0520	+0·0525	+0·0529	+0·0533	+0·0536	+0·0538	+0·0540	+0·0542	+0·0543
		Log. Q'	−8·9304	−8·8865	−8·8370	−8·7803	−8·7140	−8·6365	−8·5403	−8·4150	−8·2356	−7·9347
		Log. R'	+8·8732	+8·8294	+8·7796	+8·7226	+8·6569	+8·5794	+8·4829	+8·3575	+8·1780	+7·8770
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9995	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
	96°	Log. P'	+0·0549	+0·0554	+0·0559	+0·0563	+0·0567	+0·0570	+0·0573	+0·0575	+0·0577	+0·0578
		Log. Q'	−8·9351	−8·8910	−8·8420	−8·7853	−8·7191	−8·6415	−8·5453	−8·4200	−8·2398	−7·9389
		Log. R'	+8·8725	+8·8293	+8·7796	+8·7226	+8·6571	+8·5798	+8·4829	+8·3579	+8·1773	+7·8763
		Log. S'	+9·9988	+9·9990	+9·9992	+9·9994	+9·9995	+9·9997	+9·9998	+9·9999	+0·0000	+0·0000
			260°	261°	262°	263°	264°	265°	266°	267°	268°	269°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

$$\left\{\begin{array}{l}\text{Change of R. A. in arc} = P' \times \text{change of Longitude} + Q' \times \text{change of Ec. N. P. D.}\\ \text{Change of N. P. D.} \quad = R' \times \text{change of Longitude} + S' \times \text{change of Ec. N. P. D.}\end{array}\right\}$$

Longitude.

270°	271°	272°	273°	274°	275°	276°	277°	278°	279°		
+0·0181	+0·0181	+0·0181	+0·0180	+0·0178	+0·0176	+0·0173	+0·0170	+0·0167	+0·0164	Log. P'	84°
Inf. Neg.	+7·8992	+8·2002	+8·3802	+8·5052	+8·6010	+8·6797	+8·7459	+8·8021	+8·8519	Log. Q'	
Inf. Neg.	−7·8763	−8·1773	−8·3579	−8·4829	−8·5798	−8·6571	−8·7226	−8·7796	−8·8293	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9995	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0213	+0·0213	+0·0213	+0·0212	+0·0210	+0·0208	+0·0205	+0·0202	+0·0199	+0·0196	Log. P'	85°
Inf. Neg.	+7·9017	+8·2025	+8·3802	+8·5064	+8·6031	+8·6812	+8·7474	+8·8038	+8·8536	Log. Q'	
Inf. Neg.	−7·8770	−8·1781	−8·3575	−8·4829	−8·5794	−8·6569	−8·7226	−8·7796	−8·8294	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9995	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0245	+0·0245	+0·0245	+0·0244	+0·0242	+0·0240	+0·0237	+0·0234	+0·0231	+0·0227	Log. P'	86°
Inf. Neg.	+7·9043	+8·2053	+8·3820	+8·5079	+8·6042	+8·6829	+8·7490	+8·8061	+8·8561	Log. Q'	
Inf. Neg.	−7·8776	−8·1786	−8·3572	−8·4829	−8·5790	−8·6567	−8·7226	−8·7796	−8·8295	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0277	+0·0277	+0·0277	+0·0276	+0·0274	+0·0272	+0·0269	+0·0266	+0·0262	+0·0258	Log. P'	87°
Inf. Neg.	+7·9070	+8·2080	+8·3838	+8·5105	+8·6064	+8·6851	+8·7513	+8·8082	+8·8579	Log. Q'	
Inf. Neg.	−7·8781	−8·1791	−8·3569	−8·4829	−8·5786	−8·6565	−8·7226	−8·7803	−8·8296	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0309	+0·0309	+0·0309	+0·0308	+0·0306	+0·0304	+0·0301	+0·0298	+0·0294	+0·0290	Log. P'	88°
Inf. Neg.	+7·9099	+8·2109	+8·3874	+8·5132	+8·6096	+8·6875	+8·7536	+8·8109	+8·8609	Log. Q'	
Inf. Neg.	−7·8784	−8·1791	−8·3566	−8·4814	−8·5783	−8·6564	−8·7226	−8·7796	−8·8297	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0342	+0·0342	+0·0341	+0·0340	+0·0338	+0·0336	+0·0333	+0·0330	+0·0327	+0·0323	Log. P'	89°
Inf. Neg.	+7·9130	+8·2139	+8·3909	+8·5159	+8·6117	+8·6903	+8·7559	+8·8129	+8·8633	Log. Q'	
Inf. Neg.	−7·8786	−8·1796	−8·3563	−8·4814	−8·5779	−8·6563	−8·7226	−8·7796	−8·8298	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0375	+0·0375	+0·0374	+0·0373	+0·0371	+0·0369	+0·0366	+0·0363	+0·0359	+0·0355	Log. P'	90°
Inf. Neg.	+7·9162	+8·2171	+8·3945	+8·5198	+8·6160	+8·6934	+8·7597	+8·8169	+8·8669	Log. Q'	
Inf. Neg.	−7·8787	−8·1797	−8·3560	−8·4814	−8·5775	−8·6563	−8·7226	−8·7796	−8·8299	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0408	+0·0408	+0·0407	+0·0406	+0·0404	+0·0402	+0·0399	+0·0396	+0·0392	+0·0387	Log. P'	91°
Inf. Neg.	+7·9196	+8·2204	+8·3979	+8·5224	+8·6191	+8·6969	+8·7634	+8·8202	+8·8698	Log. Q'	
Inf. Neg.	−7·8786	−8·1796	−8·3563	−8·4814	−8·5779	−8·6563	−8·7226	−8·7796	−8·8298	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0441	+0·0441	+0·0440	+0·0439	+0·0437	+0·0435	+0·0432	+0·0429	+0·0425	+0·0420	Log. P'	92°
Inf. Neg.	+7·9231	+8·2240	+8·4014	+8·5263	+8·6222	+8·7006	+8·7664	+8·8235	+8·8733	Log. Q'	
Inf. Neg.	−7·8784	−8·1794	−8·3566	−8·4814	−8·5783	−8·6564	−8·7226	−8·7796	−8·8297	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0475	+0·0475	+0·0474	+0·0473	+0·0471	+0·0468	+0·0465	+0·0462	+0·0458	+0·0453	Log. P'	93°
Inf. Neg.	+7·9268	+8·2277	+8·4048	+8·5302	+8·6263	+8·7048	+8·7709	+8·8274	+8·8774	Log. Q'	
Inf. Neg.	−7·8781	−8·1791	−8·3569	−8·4829	−8·5787	−8·6565	−8·7226	−8·7803	−8·8296	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0509	+0·0509	+0·0508	+0·0507	+0·0505	+0·0502	+0·0499	+0·0495	+0·0491	+0·0486	Log. P'	94°
Inf. Neg.	+7·9307	+8·2316	+8·4082	+8·5340	+8·6304	+8·7092	+8·7752	+8·8319	+8·8814	Log. Q'	
Inf. Neg.	−7·8776	−8·1786	−8·3572	−8·4829	−8·5790	−8·6567	−8·7226	−8·7796	−8·8295	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9996	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0543	+0·0543	+0·0542	+0·0540	+0·0538	+0·0536	+0·0533	+0·0529	+0·0525	+0·0520	Log. P'	95°
Inf. Neg.	+7·9347	+8·2356	+8·4150	+8·5403	+8·6365	+8·7140	+8·7803	+8·8370	+8·8865	Log. Q'	
Inf. Neg.	−7·8770	−8·1780	−8·3575	−8·4829	−8·5794	−8·6569	−8·7226	−8·7796	−8·8294	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9995	+9·9994	+9·9992	+9·9990	Log. S'	
+0·0578	+0·0578	+0·0577	+0·0575	+0·0573	+0·0570	+0·0567	+0·0563	+0·0559	+0·0554	Log. P'	96°
Inf. Neg.	+7·9389	+8·2398	+8·4200	+8·5453	+8·6415	+8·7191	+8·7853	+8·8420	+8·8910	Log. Q'	
Inf. Neg.	−7·8763	−8·1773	−8·3579	−8·4829	−8·5798	−8·6571	−8·7226	−8·7796	−8·8293	Log. R'	
+0·0000	+0·0000	+0·0000	+9·9999	+9·9998	+9·9997	+9·9995	+9·9991	+9·9992	+9·9990	Log. S'	
270°	271°	272°	273°	274°	275°	276°	277°	278°	279°		

Longitude.

Ecliptic North Polar Distance.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.}
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.}

Longitude.

Ecliptic North Polar Distance.			280°	281°	282°	283°	284°	285°	286°	287°	288°	289°
	84°	Log. P'	+0·0160	+0·0156	+0·0151	+0·0146	+0·0141	+0·0135	+0·0129	+0·0122	+0·0115	+0·0108
		Log. Q'	+8·8962	+8·9365	+8·9736	+9·0077	+9·0393	+9·0682	+9·0952	+9·1202	+9·1439	+9·1658
		Log. R'	−8·8725	−8·9138	−8·9509	−8·9859	−9·0180	−9·0473	−9·0745	−9·1000	−9·1237	−9·1461
		Log. S'	+9·9988	+9·9986	+9·9983	+9·9980	+9·9976	+9·9972	+9·9969	+9·9965	+9·9961	+9·9956
	85°	Log. P'	+0·0192	+0·0188	+0·0183	+0·0177	+0·0171	+0·0165	+0·0159	+0·0152	+0·0145	+0·0138
		Log. Q'	+8·8980	+8·9384	+8·9754	+9·0094	+9·0408	+9·0697	+9·0966	+9·1217	+9·1452	+9·1670
		Log. R'	−8·8732	−8·9139	−8·9514	−8·9859	−9·0179	−9·0472	−9·0743	−9·0999	−9·1235	−9·1460
		Log. S'	+9·9988	+9·9986	+9·9983	+9·9980	+9·9976	+9·9973	+9·9969	−9·9965	+9·9961	+9·9957
	86°	Log. P'	+0·0223	+0·0218	+0·0213	+0·0208	+0·0202	+0·0196	+0·0189	+0·0182	+0·0175	+0·0167
		Log. Q'	+8·9001	+8·9410	+8·9777	+9·0116	+9·0426	+9·0715	+9·0983	+9·1235	+9·1469	+9·1688
		Log. R'	−8·8738	−8·9143	−8·9518	−8·9861	−9·0179	−9·0471	−9·0741	−9·0997	−9·1234	−9·1458
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	87°	Log. P'	+0·0254	+0·0249	+0·0244	+0·0239	+0·0233	+0·0227	+0·0220	+0·0213	+0·0205	+0·0198
		Log. Q'	+8·9024	+8·9430	+8·9800	+9·0137	+9·0447	+9·0737	+9·1004	+9·1255	+9·1488	+9·1708
		Log. R'	−8·8743	−8·9146	−8·9523	−8·9861	−9·0178	−9·0469	−9·0741	−9·0995	−9·1232	−9·1456
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	88°	Log. P'	+0·0286	+0·0281	+0·0276	+0·0270	+0·0264	+0·0258	+0·0251	+0·0244	+0·0236	+0·0228
		Log. Q'	+8·9050	+8·9455	+8·9823	+9·0162	+9·0471	+9·0759	+9·1028	+9·1278	+9·1511	+9·1729
		Log. R	−8·8746	−8·9149	−8·9523	−8·9862	−9·0177	−9·0468	−9·0741	−9·0993	−9·1230	−9·1454
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	89°	Log. P'	+0·0318	+0·0313	+0·0308	+0·0302	+0·0296	+0·0289	+0·0282	+0·0274	+0·0266	+0·0258
		Log. Q'	+8·9079	+8·9484	+8·9850	+9·0187	+9·0498	+9·0788	+9·1055	+9·1303	+9·1537	+9·1755
		Log. R'	−8·8748	−8·9151	−8·9526	−8·9862	−9·0177	−9·0466	−9·0737	−9·0991	−9·1229	−9·1452
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	90°	Log. P'	+0·0350	+0·0345	+0·0339	+0·0333	+0·0327	+0·0320	+0·0313	+0·0305	+0·0297	+0·0289
		Log. Q'	+8·9109	+8·9513	+8·9881	+9·0216	+9·0528	+9·0813	+9·1082	+9·1332	+9·1566	+9·1784
		Log. R'	−8·8749	−8·9154	−8·9523	−8·9863	−9·0176	−9·0465	−9·0737	−9·0990	−9·1229	−9·1452
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	91°	Log. P'	+0·0382	+0·0377	+0·0371	+0·0365	+0·0358	+0·0351	+0·0344	+0·0336	+0·0328	+0·0319
		Log. Q'	+8·9143	+8·9547	+8·9912	+9·0249	+9·0561	+9·0849	+9·1116	+9·1364	+9·1598	+9·1816
		Log. R'	−8·8748	−8·9151	−8·9528	−8·9862	−9·0177	−9·0466	−9·0737	−9·0991	−9·1229	−9·1453
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	92°	Log. P'	+0·0415	+0·0410	+0·0404	+0·0397	+0·0390	+0·0383	+0·0375	+0·0367	+0·0359	+0·0350
		Log. Q'	+8·9179	+8·9581	+8·9948	+9·0286	+9·0597	+9·0881	+9·1149	+9·1399	+9·1634	+9·1853
		Log. R'	−8·8746	−8·9148	−8·9523	−8·9862	−9·0177	−9·0467	−9·0741	−9·0993	−9·1230	−9·1454
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	93°	Log. P'	+0·0448	+0·0443	+0·0436	+0·0429	+0·0422	+0·0415	+0·0407	+0·0399	+0·0390	+0·0381
		Log. Q'	+8·9218	+8·9619	+8·9987	+9·0326	+9·0637	+9·0924	+9·1189	+9·1440	+9·1673	+9·1892
		Log. R'	−8·8743	−8·9145	−8·9523	−8·9861	−9·0178	−9·0468	−9·0741	−9·0995	−9·1232	−9·1456
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	94°	Log. P'	+0·0481	+0·0475	+0·0469	+0·0462	+0·0455	+0·0447	+0·0439	+0·0431	+0·0422	+0·0413
		Log. Q'	+8·9260	+8·9661	+9·0030	+9·0366	+9·0679	+9·0966	+9·1232	+9·1480	+9·1715	+9·1934
		Log. R'	−8·8738	−8·9143	−8·9518	−8·9860	−9·0179	−9·0470	−9·0741	−9·0997	−9·1234	−9·1458
		Log. S'	+9·9988	+9·9985	+9·9982	+9·9979	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	95°	Log. P'	+0·0515	+0·0509	+0·0502	+0·0495	+0·0488	+0·0480	+0·0472	+0·0463	+0·0454	+0·0445
		Log. Q'	+8·9304	+8·9708	+9·0075	+9·0414	+9·0725	+9·1014	+9·1281	+9·1529	+9·1761	+9·1976
		Log. R'	−8·8732	−8·9140	−8·9513	−8·9860	−9·0179	−9·0471	−9·0745	−9·0999	−9·1235	−9·1460
		Log. S'	+9·9988	+9·9986	+9·9983	+9·9980	+9·9976	+9·9973	+9·9969	+9·9965	+9·9961	+9·9957
	96°	Log. P'	+0·0549	+0·0543	+0·0536	+0·0529	+0·0521	+0·0513	+0·0504	+0·0495	+0·0486	+0·0476
		Log. Q	+8·9351	+8·9754	+9·0124	+9·0461	+9·0773	+9·1062	+9·1326	+9·1575	+9·1810	+9·2028
		Log. R'	−8·8725	−8·9138	−8·9509	−8·9859	−9·0180	−9·0473	−9·0745	−9·1000	−9·1237	−9·1461
		Log. S'	+9·9988	+9·9986	+9·9983	+9·9979	+9·9976	+9·9972	+9·9969	+9·9965	+9·9961	+9·9956
			280°	281°	282°	283°	284°	285°	286°	287°	288°	289°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{ Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D. }
{ Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D. }

Longitude.

290°	291°	292°	293°	294°	295°	296°	297°	298°	299°		
+0·0101	+0·0093	+0·0085	+0·0077	+0·0068	+0·0059	+0·0050	+0·0041	+0·0031	+0·0022	Log. P'	84°
+9·1864	+9·2057	+9·2243	+9·2418	+9·2584	+9·2742	+9·2892	+9·3032	+9·3168	+9·3296	Log. Q'	
−9·1670	−9·1868	−9·2053	−9·2231	−9·2400	−9·2562	−9·2716	−9·2863	−9·3002	−9·3135	Log. R'	
+9·9952	+9·9947	+9·9943	+9·9938	+9·9933	+9·9927	+9·9922	+9·9916	+9·9911	+9·9905	Log. S'	
+0·0131	+0·0123	+0·0115	+0·0107	+0·0098	+0·0089	+0·0079	+0·0070	+0·0060	+0·0049	Log. P'	85°
+9·1878	+9·2071	+9·2256	+9·2430	+9·2596	+9·2753	+9·2903	+9·3045	+9·3181	+9·3310	Log. Q'	
−9·1668	−9·1868	−9·2052	−9·2230	−9·2399	−9·2561	−9·2715	−9·2862	−9·3001	−9·3134	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9922	+9·9917	+9·9911	+9·9905	Log. S'	
+0·0160	+0·0152	+0·0144	+0·0135	+0·0126	+0·0116	+0·0107	+0·0097	+0·0087	+0·0076	Log. P'	86°
+9·1895	+9·2087	+9·2272	+9·2445	+9·2610	+9·2767	+9·2918	+9·3060	+9·3195	+9·3321	Log. Q'	
−9·1667	−9·1867	−9·2052	−9·2229	−9·2398	−9·2559	−9·2714	−9·2861	−9·3000	−9·3133	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0190	+0·0182	+0·0173	+0·0164	+0·0155	+0·0146	+0·0135	+0·0125	+0·0115	+0·0104	Log. P'	87°
+9·1915	+9·2109	+9·2291	+9·2465	+9·2629	+9·2785	+9·2936	+9·3077	+9·3212	+9·3341	Log. Q'	
−9·1664	−9·1865	−9·2051	−9·2228	−9·2397	−9·2558	−9·2712	−9·2860	−9·2999	−9·3132	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0220	+0·0211	+0·0202	+0·0193	+0·0183	+0·0173	+0·0163	+0·0153	+0·0142	+0·0131	Log. P'	88°
+9·1934	+9·2129	+9·2313	+9·2485	+9·2651	+9·2808	+9·2957	+9·3098	+9·3235	+9·3363	Log. Q'	
−9·1662	−9·1863	−9·2050	−9·2228	−9·2397	−9·2557	−9·2711	−9·2858	−9·2998	−9·3131	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0250	+0·0241	+0·0232	+0·0223	+0·0213	+0·0203	+0·0192	+0·0181	+0·0170	+0·0159	Log. P'	89°
+9·1962	+9·2156	+9·2339	+9·2514	+9·2679	+9·2833	+9·2981	+9·3122	+9·3257	+9·3385	Log. Q'	
−9·1662	−9·1862	−9·2050	−9·2227	−9·2396	−9·2556	−9·2711	−9·2857	−9·2997	−9·3130	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0280	+0·0271	+0·0261	−0·0252	+0·0242	+0·0232	+0·0221	+0·0210	+0·0198	+0·0186	Log. P'	90°
+9·1989	+9·2183	+9·2367	+9·2541	+9·2704	+9·2860	+9·3009	+9·3149	+9·3284	+9·3410	Log. Q'	
−9·1661	−9·1861	−9·2049	−9·2227	−9·2395	−9·2555	−9·2710	−9·2856	−9·2995	−9·3128	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0310	+0·0301	+0·0291	+0·0281	+0·0271	+0·0261	+0·0250	+0·0239	+0·0227	+0·0215	Log. P'	91°
+9·2022	+9·2214	+9·2399	+9·2572	+9·2737	+9·2891	+9·3039	+9·3179	+9·3312	+9·3440	Log. Q'	
−9·1661	−9·1862	−9·2050	−9·2227	−9·2398	−9·2556	−9·2711	−9·2857	−9·2997	−9·3129	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0340	+0·0330	+0·0320	+0·0310	+0·0300	+0·0289	+0·0278	+0·0266	+0·0254	+0·0242	Log. P'	92°
+9·2057	+9·2251	+9·2433	+9·2605	+9·2769	+9·2925	+9·3072	+9·3214	+9·3347	+9·3473	Log. Q'	
−9·1661	−9·1863	−9·2050	−9·2228	−9·2398	−9·2558	−9·2711	−9·2859	−9·2997	−9·3130	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0371	+0·0361	+0·0351	+0·0341	+0·0330	+0·0319	+0·0307	+0·0295	+0·0283	+0·0270	Log. P'	93°
+9·2095	+9·2289	+9·2471	+9·2646	+9·2805	+9·2962	+9·3109	+9·3249	+9·3381	+9·3508	Log. Q'	
−9·1664	−9·1865	−9·2051	−9·2229	−9·2398	−9·2559	−9·2712	−9·2860	−9·2999	−9·3132	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0403	+0·0393	+0·0382	+0·0371	+0·0360	+0·0348	+0·0336	+0·0323	+0·0311	+0·0297	Log. P'	94°
+9·2138	+9·2330	+9·2511	+9·2683	+9·2847	+9·3002	+9·3148	+9·3288	+9·3420	+9·3547	Log. Q'	
−9·1667	−9·1866	−9·2052	−9·2229	−9·2398	−9·2560	−9·2714	−9·2861	−9·2999	−9·3133	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9923	+9·9918	+9·9912	+9·9906	Log. S'	
+0·0435	+0·0424	+0·0413	+0·0402	+0·0390	+0·0378	+0·0365	+0·0352	+0·0339	+0·0326	Log. P'	95°
+9·2177	+9·2370	+9·2555	+9·2728	+9·2889	+9·3043	+9·3190	+9·3326	+9·3458	+9·3585	Log. Q'	
−9·1667	−9·1867	−9·2052	−9·2230	−9·2400	−9·2561	−9·2715	−9·2862	−9·3002	−9·3134	Log. R'	
+9·9952	+9·9948	+9·9943	+9·9938	+9·9933	+9·9928	+9·9922	+9·9917	+9·9911	+9·9905	Log. S'	
+0·0466	+0·0455	+0·0443	+0·0431	+0·0419	+0·0406	+0·0393	+0·0380	+0·0367	+0·0354	Log. P'	96°
+9·2230	+9·2420	+9·2601	+9·2772	+9·2934	+9·3088	+9·3235	+9·3373	+9·3501	+9·3630	Log. Q'	
−9·1670	−9·1868	−9·2053	−9·2231	−9·2400	−9·2562	−9·2716	−9·2863	−9·3002	−9·3135	Log. R'	
+9·9952	+9·9947	+9·9943	+9·9938	+9·9933	+9·9927	+9·9922	+9·9916	+9·9911	+9·9905	Log. S'	
290°	291°	292°	293°	294°	295°	296°	297°	298°	299°		

Longitude.

Ecliptic North Polar Distance.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.}
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.}

Longitude.

Ecliptic North Polar Distance.			300°	301°	302°	303°	304°	305°	306°	307°	308°	309°
	84°	Log. P'	+0·0012	+0·0002	+9·9992	+9·9982	+9·9971	+9·9960	+9·9950	+9·9939	+9·9929	+9·9918
		Log. Q'	+9·3421	+9·3541	+9·3656	+9·3766	+9·3871	+9·3971	+9·4066	+9·4156	+9·4242	+9·4327
		Log. R'	−9·3260	−9·3383	−9·3501	−9·3616	−9·3726	−9·3831	−9·3930	−9·4025	−9·4115	−9·4204
		Log. S'	+9·9899	+9·9893	+9·9887	+9·9880	+9·9874	+9·9868	+9·9862	+9·9855	+9·9849	+9·9842
	85°	Log. P'	+0·0039	+0·0028	+0·0018	+0·0007	+9·9997	+9·9986	+9·9976	+9·9965	+9·9954	+9·9942
		Log. Q'	+9·3433	+9·3552	+9·3666	+9·3776	+9·3882	+9·3982	+9·4077	+9·4167	+9·4253	+9·4337
		Log. R'	−9·3260	−9·3383	−9·3501	−9·3616	−9·3726	−9·3831	−9·3930	−9·4025	−9·4116	−9·4204
		Log. S'	+9·9899	+9·9893	+9·9887	+9·9881	+9·9874	+9·9868	+9·9862	+9·9855	+9·9849	+9·9843
	86°	Log. P'	+0·0066	+0·0055	+0·0045	+0·0034	+0·0023	+0·0012	+0·0001	+9·9989	+9·9978	+9·9966
		Log. Q'	+9·3447	+9·3566	+9·3681	+9·3791	+9·3896	+9·3996	+9·4091	+9·4181	+9·4266	+9·4350
		Log. R'	−9·3259	−9·3382	−9·3501	−9·3616	−9·3726	−9·3831	−9·3931	−9·4026	−9·4117	−9·4205
		Log. S'	+9·9899	+9·9893	+9·9887	+9·9881	+9·9875	+9·9869	+9·9863	+9·9857	+9·9849	+9·9844
	87°	Log. P'	+0·0093	+0·0082	+0·0071	+0·0060	+0·0049	+0·0038	+0·0026	+0·0014	+0·0002	+9·9990
		Log. Q'	+9·3464	+9·3583	+9·3698	+9·3808	+9·3912	+9·4012	+9·4107	+9·4197	+9·4282	+9·4365
		Log. R'	−9·3259	−9·3382	−9·3501	−9·3616	−9·3726	−9·3831	−9·3932	−9·4027	−9·4118	−9·4206
		Log. S'	+9·9900	+9·9894	+9·9888	+9·9882	+9·9875	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	88°	Log. P'	+0·0120	+0·0109	+0·0098	+0·0087	+0·0075	+0·0063	+0·0051	+0·0039	+0·0026	+0·0014
		Log. Q'	+9·3484	+9·3603	+9·3718	+9·3827	+9·3931	+9·4030	+9·4125	+9·4215	+9·4300	+9·4382
		Log. R'	−9·3258	−9·3381	−9·3501	−9·3615	−9·3726	−9·3831	−9·3932	−9·4027	−9·4118	−9·4206
		Log. S'	+9·9900	+9·9894	+9·9888	+9·9882	+9·9876	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	89°	Log. P'	+0·0147	+0·0136	+0·0124	+0·0112	+0·0101	+0·0089	+0·0077	+0·0064	+0·0051	+0·0039
		Log. Q'	+9·3507	+9·3625	+9·3738	+9·3848	+9·3953	+9·4052	+9·4146	+9·4235	+9·4320	+9·4403
		Log. R'	−9·3258	−9·3381	−9·3501	−9·3615	−9·3726	−9·3831	−9·3932	−9·4028	−9·4118	−9·4207
		Log. S'	+9·9900	+9·9894	+9·9888	+9·9882	+9·9876	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	90°	Log. P'	+0·0174	+0·0162	+0·0151	+0·0139	+0·0127	+0·0114	+0·0101	+0·0088	+0·0075	+0·0062
		Log. Q'	+9·3533	+9·3651	+9·3765	+9·3874	+9·3977	+9·4076	+9·4170	+9·4259	+9·4343	+9·4425
		Log. R'	−9·3258	−9·3381	−9·3501	−9·3615	−9·3726	−9·3831	−9·3932	−9·4028	−9·4118	−9·4207
		Log. S'	+9·9900	+9·9894	+9·9888	+9·9882	+9·9876	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	91°	Log. P'	+0·0202	+0·0190	+0·0178	+0·0166	+0·0153	+0·0140	+0·0126	+0·0113	+0·0099	+0·0086
		Log. Q'	+9·3562	+9·3679	+9·3791	+9·3900	+9·4004	+9·4103	+9·4196	+9·4285	+9·4369	+9·4451
		Log. R'	−9·3258	−9·3381	−9·3501	−9·3615	−9·3726	−9·3831	−9·3932	−9·4028	−9·4118	−9·4206
		Log. S'	+9·9900	+9·9894	+9·9888	+9·9882	+9·9876	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	92°	Log. P'	+0·0229	+0·0217	+0·0204	+0·0191	+0·0178	+0·0165	+0·0151	+0·0137	+0·0123	+0·0109
		Log. Q'	+9·3593	+9·3710	+9·3822	+9·3930	+9·4034	+9·4132	+9·4225	+9·4313	+9·4397	+9·4479
		Log. R'	−9·3258	−9·3381	−9·3501	−9·3616	−9·3726	−9·3831	−9·3932	−9·4027	−9·4118	−9·4206
		Log. S'	+9·9900	+9·9894	+9·9888	+9·9882	+9·9876	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	93°	Log. P'	+0·0257	+0·0243	+0·0231	+0·0218	+0·0204	+0·0190	+0·0177	+0·0162	+0·0148	+0·0134
		Log. Q'	+9·3628	+9·3744	+9·3856	+9·3965	+9·4067	+9·4164	+9·4257	+9·4345	+9·4428	+9·4509
		Log. R'	−9·3259	−9·3382	−9·3502	−9·3616	−9·3726	−9·3831	−9·3932	−9·4026	−9·4118	−9·4205
		Log. S'	+9·9900	+9·9894	+9·9888	+9·9882	+9·9875	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	94°	Log. P'	+0·0284	+0·0271	+0·0257	+0·0244	+0·0230	+0·0216	+0·0202	+0·0187	+0·0172	+0·0157
		Log. Q'	+9·3665	+9·3782	+9·3894	+9·4001	+9·4102	+9·4199	+9·4291	+9·4378	+9·4461	+9·4542
		Log. R'	−9·3259	−9·3383	−9·3502	−9·3616	−9·3726	−9·3831	−9·3931	−9·4026	−9·4117	−9·4205
		Log. S'	+9·9899	+9·9893	+9·9887	+9·9881	+9·9875	+9·9869	+9·9863	+9·9857	+9·9850	+9·9844
	95°	Log. P'	+0·0312	+0·0298	+0·0284	+0·0270	+0·0256	+0·0241	+0·0227	+0·0212	+0·0197	+0·0181
		Log. Q	+9·3706	+9·3822	+9·3933	+9·4039	+9·4140	+9·4236	+9·4328	+9·4415	+9·4497	+9·4577
		Log. R'	−9·3260	−9·3383	−9·3502	−9·3616	−9·3726	−9·3831	−9·3930	−9·4025	−9·4116	−9·4204
		Log. S'	+9·9899	+9·9893	+9·9887	+9·9881	+9·9874	+9·9868	+9·9862	+9·9855	+9·9849	+9·9843
	96°	Log. P'	+0·0340	+0·0326	+0·0311	+0·0296	+0·0281	+0·0266	+0·0251	+0·0236	+0·0221	+0·0206
		Log. Q	+9·3749	+9·3864	+9·3975	+9·4081	+9·4181	+9·4277	+9·4368	+9·4454	+9·4535	+9·4615
		Log. R'	−9·3260	−9·3383	−9·3501	−9·3616	−9·3726	−9·3831	−9·3930	−9·4025	−9·4115	−9·4204
		Log. S'	+9·9899	+9·9893	+9·9887	+9·9880	+9·9874	+9·9868	+9·9862	+9·9855	+9·9849	+9·9842
			309°	301°	302°	303°	304°	305°	306°	307°	308°	309°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{ Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D. }
{ Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D. }

Longitude.

310°	311°	312°	313°	314°	315°	316°	317°	318°	319°		
+9·9907	+9·9896	+9·9885	+9·9874	+9·9864	+9·9853	+9·9843	+9·9832	+9·9822	+9·9811	Log. P'	84°
+9·4410	+9·4489	+9·4565	+9·4638	+9·4707	+9·4773	+9·4836	+9·4897	+9·4956	+9·5012	Log. Q'	
−9·4291	−9·4374	−9·4454	−9·4531	−9·4604	−9·4674	−9·4741	−9·4807	−9·4870	−9·4930	Log. R'	
+9·9836	+9·9829	+9·9822	+9·9815	+9·9809	+9·9802	+9·9796	+9·9789	+9·9783	+9·9776	Log. S'	
+9·9931	+9·9920	+9·9909	+9·9898	+9·9887	+9·9875	+9·9864	+9·9853	+9·9842	+9·9831	Log. P'	85°
+9·4419	+9·4498	+9·4573	+9·4645	+9·4714	+9·4780	+9·4843	+9·4904	+9·4963	+9·5019	Log. Q'	
−9·4291	−9·4374	−9·4454	−9·4531	−9·4604	−9·4674	−9·4741	−9·4807	−9·4870	−9·4930	Log. R'	
+9·9836	+9·9829	+9·9822	+9·9815	+9·9809	+9·9802	+9·9796	+9·9789	+9·9783	+9·9776	Log. S'	
+9·9955	+9·9943	+9·9932	+9·9920	+9·9909	+9·9897	+9·9885	+9·9874	+9·9863	+9·9852	Log. P'	86°
+9·4432	+9·4510	+9·4584	+9·4656	+9·4724	+9·4790	+9·4852	+9·4913	+9·4971	+9·5027	Log. Q'	
−9·4292	−9·4374	−9·4454	−9·4530	−9·4604	−9·4674	−9·4742	−9·4807	−9·4870	−9·4930	Log. R'	
+9·9837	+9·9830	+9·9823	+9·9816	+9·9810	+9·9803	+9·9797	+9·9790	+9·9784	+9·9777	Log. S'	
+9·9979	+9·9967	+9·9955	+9·9943	+9·9931	+9·9919	+9·9907	+9·9895	+9·9884	+9·9872	Log. P'	87°
+9·4446	+9·4523	+9·4597	+9·4668	+9·4737	+9·4802	+9·4864	+9·4925	+9·4983	+9·5038	Log. Q'	
−9·4293	−9·4375	−9·4453	−9·4529	−9·4603	−9·4674	−9·4742	−9·4808	−9·4871	−9·4931	Log. R'	
+9·9837	+9·9830	+9·9823	+9·9816	+9·9810	+9·9803	+9·9797	+9·9790	+9·9784	+9·9777	Log. S'	
+0·0002	+9·9990	+9·9978	+9·9965	+9·9953	+9·9940	+9·9928	+9·9916	+9·9904	+9·9892	Log. P'	88°
+9·4464	+9·4540	+9·4613	+9·4684	+9·4752	+9·4817	+9·4878	+9·4936	+9·4996	+9·5051	Log. Q'	
−9·4293	−9·4375	−9·4453	−9·4529	−9·4603	−9·4674	−9·4742	−9·4808	−9·4871	−9·4931	Log. R'	
+9·9837	+9·9830	+9·9824	+9·9817	+9·9811	+9·9804	+9·9798	+9·9791	+9·9785	+9·9778	Log. S'	
+0·0026	+0·0013	+0·0001	+9·9988	+9·9975	+9·9962	+9·9949	+9·9936	+9·9924	+9·9912	Log. P'	89°
+9·4483	+9·4559	+9·4632	+9·4702	+9·4770	+9·4834	+9·4895	+9·4955	+9·5012	+9·5067	Log. Q'	
−9·4293	−9·4375	−9·4453	−9·4529	−9·4603	−9·4674	−9·4742	−9·4808	−9·4871	−9·4931	Log. R'	
+9·9837	+9·9830	+9·9824	+9·9817	+9·9811	+9·9804	+9·9798	+9·9791	+9·9785	+9·9778	Log. S'	
+0·0049	+0·0036	+0·0023	+0·0010	+9·9997	+9·9984	+9·9970	+9·9957	+9·9944	+9·9931	Log. P'	90°
+9·4505	+9·4581	+9·4653	+9·4723	+9·4790	+9·4854	+9·4915	+9·4974	+9·5031	+9·5085	Log. Q'	
−9·4293	−9·4375	−9·4453	−9·4529	−9·4603	−9·4674	−9·4742	−9·4808	−9·4871	−9·4931	Log. R'	
+9·9837	+9·9830	+9·9824	+9·9817	+9·9811	+9·9804	+9·9798	+9·9791	+9·9785	+9·9778	Log. S'	
+0·0072	+0·0059	+0·0046	+0·0033	+0·0019	+0·0005	+9·9991	+9·9977	+9·9964	+9·9951	Log. P'	91°
+9·4530	+9·4605	+9·4677	+9·4746	+9·4813	+9·4877	+9·4937	+9·4996	+9·5052	+9·5106	Log. Q'	
−9·4293	−9·4375	−9·4453	−9·4529	−9·4603	−9·4674	−9·4742	−9·4808	−9·4871	−9·4931	Log. R'	
+9·9837	+9·9830	+9·9824	+9·9817	+9·9811	+9·9804	+9·9798	+9·9791	+9·9785	+9·9778	Log. S'	
+0·0096	+0·0082	+0·0068	+0·0054	+0·0040	+0·0026	+0·0012	+9·9998	+9·9984	+9·9970	Log. P'	92°
+9·4557	+9·4632	+9·4703	+9·4772	+9·4838	+9·4901	+9·4962	+9·5020	+9·5076	+9·5129	Log. Q'	
−9·4293	−9·4375	−9·4453	−9·4529	−9·4603	−9·4674	−9·4742	−9·4808	−9·4871	−9·4931	Log. R'	
+9·9837	+9·9830	+9·9824	+9·9817	+9·9811	+9·9804	+9·9798	+9·9791	+9·9785	+9·9778	Log. S'	
+0·0120	+0·0106	+0·0091	+0·0076	+0·0062	+0·0047	+0·0033	+0·0019	+0·0005	+9·9991	Log. P'	93°
+9·4588	+9·4662	+9·4733	+9·4801	+9·4867	+9·4930	+9·4989	+9·5046	+9·5102	+9·5155	Log. Q'	
−9·4293	−9·4375	−9·4453	−9·4529	−9·4603	−9·4674	−9·4742	−9·4808	−9·4871	−9·4931	Log. R'	
+9·9837	+9·9830	+9·9823	+9·9816	+9·9810	+9·9803	+9·9797	+9·9790	+9·9784	+9·9777	Log. S'	
+0·0143	+0·0128	+0·0113	+0·0098	+0·0083	+0·0068	+0·0053	+0·0038	+0·0023	+0·0008	Log. P'	94°
+9·4620	+9·4694	+9·4765	+9·4833	+9·4898	+9·4960	+9·5019	+9·5076	+9·5131	+9·5183	Log. Q'	
−9·4292	−9·4374	−9·4454	−9·4530	−9·4604	−9·4674	−9·4742	−9·4807	−9·4870	−9·4930	Log. R	
+9·9837	+9·9830	+9·9823	+9·9816	+9·9810	+9·9803	+9·9797	+9·9790	+9·9784	+9·9777	Log. S'	
+0·0166	+0·0150	+0·0135	+0·0119	+0·0104	+0·0089	+0·0074	+0·0059	+0·0044	+0·0029	Log. P'	95°
+9·4655	+9·4729	+9·4800	+9·4868	+9·4932	+9·4994	+9·5052	+9·5109	+9·5163	+9·5214	Log. Q'	
−9·4291	−9·4374	−9·4454	−9·4531	−9·4604	−9·4674	−9·4741	−9·4807	−9·4870	−9·4930	Log. R'	
+9·9836	+9·9829	+9·9822	+9·9815	+9·9809	+9·9802	+9·9796	+9·9789	+9·9783	+9·9776	Log. S'	
+0·0190	+0·0174	+0·0157	+0·0141	+0·0126	+0·0110	+0·0094	+0·0078	+0·0063	+0·0047	Log. P'	96°
+9·4693	+9·4767	+9·4837	+9·4905	+9·4969	+9·5030	+9·5087	+9·5143	+9·5197	+9·5248	Log. Q	
−9·4291	−9·4374	−9·4454	−9·4531	−9·4604	−9·4674	−9·4741	−9·4807	−9·4870	−9·4930	Log. R'	
+9·9836	+9·9829	+9·9822	+9·9815	+9·9809	+9·9802	+9·9796	+9·9789	+9·9783	+9·9776	Log. S'	
310°	311°	312°	313°	314°	315°	316°	317°	318°	319°		

Longitude.

Ecliptic North Polar Distance.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

$$\left\{\begin{array}{l}\text{Change of R. A. in arc} = P' \times \text{change of Longitude} + Q' \times \text{change of Ec. N. P. D.}\\ \text{Change of N. P. D.} \quad = R' \times \text{change of Longitude} + S' \times \text{change of Ec. N. P. D.}\end{array}\right\}$$

Longitude.

Ecliptic North Polar Distance.		320°	321°	322°	323°	324°	325°	326°	327°	328°	329°
84°	Log. P'	+9·9801	+9·9791	+9·9781	+9·9771	+9·9762	+9·9752	+9·9743	+9·9734	+9·9725	+9·9717
	Log. Q'	+9·5066	+9·5118	+9·5169	+9·5218	+9·5265	+9·5310	+9·5353	+9·5394	+9·5434	+9·5472
	Log. R'	−9·4987	−9·5043	−9·5097	−9·5149	−9·5200	−9·5247	−9·5295	−9·5338	−9·5382	−9·5421
	Log. S'	+9·9770	+9·9763	+9·9757	+9·9751	+9·9745	+9·9739	+9·9733	+9·9727	+9·9721	+9·9715
85°	Log. P'	+9·9821	+9·9810	+9·9800	+9·9790	+9·9780	+9·9770	+9·9761	+9·9751	+9·9742	+9·9733
	Log. Q'	+9·5072	+9·5124	+9·5174	+9·5222	+9·5268	+9·5313	+9·5356	+9·5397	+9·5436	+9·5473
	Log. R'	−9·4988	−9·5043	−9·5097	−9·5149	−9·5200	−9·5247	−9·5295	−9·5338	−9·5382	−9·5421
	Log. S'	+9·9770	+9·9763	+9·9757	+9·9751	+9·9745	+9·9739	+9·9733	+9·9727	+9·9722	+9·9716
86°	Log. P'	+9·9841	+9·9830	+9·9819	+9·9808	+9·9798	+9·9788	+9·9778	+9·9768	+9·9759	+9·9750
	Log. Q'	+9·5080	+9·5132	+9·5181	+9·5229	+9·5274	+9·5318	+9·5361	+9·5401	+9·5440	+9·5477
	Log. R'	−9·4988	−9·5044	−9·5098	−9·5150	−9·5200	−9·5247	−9·5295	−9·5338	−9·5382	−9·5421
	Log. S'	+9·9771	+9·9764	+9·9758	+9·9752	+9·9746	+9·9740	+9·9734	+9·9728	+9·9723	+9·9717
87°	Log. P'	+9·9861	+9·9849	+9·9838	+9·9827	+9·9816	+9·9805	+9·9795	+9·9785	+9·9776	+9·9766
	Log. Q'	+9·5091	+9·5142	+9·5191	+9·5238	+9·5282	+9·5326	+9·5368	+9·5408	+9·5447	+9·5484
	Log. R'	−9·4989	−9·5045	−9·5099	−9·5151	−9·5200	−9·5247	−9·5295	−9·5339	−9·5382	−9·5421
	Log. S'	+9·9771	+9·9761	+9·9758	+9·9752	+9·9746	+9·9740	+9·9734	+9·9728	+9·9723	+9·9717
88°	Log. P'	+9·9881	+9·9869	+9·9858	+9·9846	+9·9834	+9·9823	+9·9812	+9·9802	+9·9792	+9·9782
	Log. Q'	+9·5104	+9·5155	+9·5203	+9·5249	+9·5293	+9·5336	+9·5378	+9·5418	+9·5456	+9·5492
	Log. R'	−9·4989	−9·5045	−9·5099	−9·5151	−9·5200	−9·5248	−9·5295	−9·5340	−9·5382	−9·5421
	Log. S'	+9·9772	+9·9765	+9·9759	+9·9753	+9·9747	+9·9741	+9·9735	+9·9729	+9·9724	+9·9718
89°	Log. P'	+9·9900	+9·9888	+9·9876	+9·9864	+9·9852	+9·9841	+9·9830	+9·9819	+9·9808	+9·9797
	Log. Q'	+9·5119	+9·5169	+9·5217	+9·5263	+9·5306	+9·5349	+9·5390	+9·5428	+9·5468	+9·5504
	Log. R'	−9·4989	−9·5045	−9·5099	−9·5151	−9·5200	−9·5248	−9·5295	−9·5340	−9·5382	−9·5421
	Log. S'	+9·9772	+9·9765	+9·9759	+9·9753	+9·9747	+9·9741	+9·9735	+9·9729	+9·9724	+9·9719
90°	Log. P'	+9·9919	+9·9906	+9·9894	+9·9881	+9·9869	+9·9857	+9·9846	+9·9834	+9·9823	+9·9812
	Log. Q'	+9·5137	+9·5187	+9·5234	+9·5279	+9·5322	+9·5364	+9·5405	+9·5444	+9·5481	+9·5516
	Log. R'	−9·4989	−9·5045	−9·5099	−9·5151	−9·5200	−9·5248	−9·5295	−9·5340	−9·5382	−9·5421
	Log. S'	+9·9772	+9·9765	+9·9759	+9·9753	+9·9747	+9·9741	+9·9736	+9·9730	+9·9725	+9·9719
91°	Log. P'	+9·9938	+9·9925	+9·9912	+9·9899	+9·9886	+9·9874	+9·9862	+9·9850	+9·9838	+9·9826
	Log. Q'	+9·5157	+9·5207	+9·5254	+9·5299	+9·5341	+9·5383	+9·5423	+9·5461	+9·5498	+9·5533
	Log. R'	−9·4989	−9·5045	−9·5099	−9·5151	−9·5200	−9·5248	−9·5295	−9·5340	−9·5382	−9·5421
	Log. S'	+9·9772	+9·9765	+9·9759	+9·9753	+9·9747	+9·9741	+9·9735	+9·9729	+9·9724	+9·9719
92°	Log. P'	+9·9957	+9·9943	+9·9930	+9·9916	+9·9903	+9·9890	+9·9878	+9·9865	+9·9853	+9·9841
	Log. Q'	+9·5180	+9·5229	+9·5276	+9·5320	+9·5362	+9·5403	+9·5443	+9·5481	+9·5517	+9·5551
	Log. R'	−9·4989	−9·5045	−9·5099	−9·5151	−9·5200	−9·5248	−9·5295	−9·5340	−9·5382	−9·5421
	Log. S'	+9·9772	+9·9765	+9·9759	+9·9753	+9·9747	+9·9741	+9·9735	+9·9729	+9·9724	+9·9718
93°	Log. P'	+9·9976	+9·9962	+9·9948	+9·9934	+9·9920	+9·9907	+9·9894	+9·9881	+9·9868	+9·9855
	Log. Q'	+9·5205	+9·5254	+9·5300	+9·5344	+9·5386	+9·5427	+9·5466	+9·5503	+9·5539	+9·5573
	Log. R'	−9·4989	−9·5045	−9·5099	−9·5151	−9·5200	−9·5247	−9·5295	−9·5339	−9·5382	−9·5421
	Log. S'	+9·9771	+9·9764	+9·9758	+9·9752	+9·9746	+9·9740	+9·9734	+9·9728	+9·9723	+9·9717
94°	Log. P'	+9·9994	+9·9979	+9·9965	+9·9951	+9·9937	+9·9923	+9·9909	+9·9895	+9·9882	+9·9869
	Log. Q'	+9·5233	+9·5281	+9·5326	+9·5370	+9·5412	+9·5452	+9·5491	+9·5528	+9·5563	+9·5596
	Log. R'	−9·4988	−9·5044	−9·5098	−9·5150	−9·5200	−9·5247	−9·5295	−9·5339	−9·5382	−9·5421
	Log. S'	+9·9771	+9·9764	+9·9758	+9·9752	+9·9746	+9·9740	+9·9734	+9·9728	+9·9723	+9·9717
95°	Log. P'	+0·0013	+9·9998	+9·9983	+9·9968	+9·9954	+9·9939	+9·9925	+9·9910	+9·9896	+9·9883
	Log. Q'	+9·5263	+9·5310	+9·5356	+9·5400	+9·5441	+9·5481	+9·5519	+9·5555	+9·5590	+9·5623
	Log. R'	−9·4988	−9·5043	−9·5097	−9·5149	−9·5200	−9·5247	−9·5295	−9·5338	−9·5382	−9·5421
	Log. S'	+9·9770	+9·9763	+9·9757	+9·9751	+9·9745	+9·9739	+9·9733	+9·9727	+9·9722	+9·9716
96°	Log. P'	+0·0031	+0·0015	+0·0000	+9·9985	+9·9970	+9·9955	+9·9940	+9·9925	+9·9910	+9·9896
	Log. Q'	+9·5296	+9·5343	+9·5389	+9·5432	+9·5473	+9·5513	+9·5550	+9·5585	+9·5619	+9·5652
	Log. R'	−9·4987	−9·5043	−9·5097	−9·5149	−9·5200	−9·5247	−9·5295	−9·5338	−9·5382	−9·5421
	Log. S'	+9·9770	+9·9763	+9·9757	+9·9751	+9·9745	+9·9739	+9·9733	+9·9727	+9·9721	+9·9715
		320°	321°	322°	323°	324°	325°	326°	327°	328°	329°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.}
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.}

Longitude.

330°	331°	332°	333°	334°	335°	336°	337°	338°	339°			
+9·9709	+9·9701	+9·9694	+9·9686	+9·9679	+9·9672	+9·9665	+9·9658	+9·9652	+9·9646	Log. P'	84°	Ecliptic North Polar Distance.
+9·5508	+9·5542	+9·5574	+9·5606	+9·5637	+9·5666	+9·5694	+9·5721	+9·5748	+9·5774	Log. Q'		
−9·5461	−9·5497	−9·5532	−9·5566	−9·5599	−9·5631	−9·5661	−9·5690	−9·5718	−9·5745	Log. R'		
+9·9710	+9·9705	+9·9700	+9·9695	+9·9690	+9·9685	+9·9680	+9·9675	+9·9671	+9·9666	Log. S'		
+9·9725	+9·9717	+9·9709	+9·9701	+9·9694	+9·9686	+9·9679	+9·9672	+9·9665	+9·9659	Log. P'	85°	
+9·5509	+9·5543	+9·5574	+9·5605	+9·5636	+9·5665	+9·5693	+9·5720	+9·5746	+9·5771	Log. Q'		
−9·5461	−9·5498	−9·5533	−9·5566	−9·5599	−9·5631	−9·5661	−9·5690	−9·5718	−9·5745	Log. R'		
+9·9711	+9·9705	+9·9700	+9·9695	+9·9690	+9·9685	+9·9680	+9·9675	+9·9671	+9·9667	Log. S'		
+9·9741	+9·9732	+9·9724	+9·9716	+9·9708	+9·9700	+9·9692	+9·9685	+9·9678	+9·9671	Log. P'	86°	
+9·5512	+9·5545	+9·5577	+9·5608	+9·5638	+9·5667	+9·5694	+9·5721	+9·5746	+9·5770	Log. Q'		
−9·5461	−9·5498	−9·5533	−9·5566	−9·5600	−9·5632	−9·5662	−9·5691	−9·5719	−9·5745	Log. R'		
+9·9712	+9·9706	+9·9701	+9·9696	+9·9691	+9·9686	+9·9681	+9·9676	+9·9672	+9·9668	Log. S'		
+9·9757	+9·9747	+9·9738	+9·9729	+9·9721	+9·9713	+9·9705	+9·9697	+9·9690	+9·9683	Log. P'	87°	
+9·5518	+9·5551	+9·5582	+9·5613	+9·5642	+9·5670	+9·5697	+9·5723	+9·5748	+9·5772	Log. Q'		
−9·5462	−9·5499	−9·5534	−9·5566	−9·5601	−9·5633	−9·5663	−9·5692	−9·5719	−9·5745	Log. R'		
+9·9712	+9·9707	+9·9702	+9·9697	+9·9692	+9·9687	+9·9682	+9·9677	+9·9673	+9·9669	Log. S'		
+9·9772	+9·9762	+9·9752	+9·9743	+9·9734	+9·9725	+9·9717	+9·9709	+9·9701	+9·9694	Log. P'	88°	
+9·5527	+9·5560	+9·5590	+9·5620	+9·5649	+9·5677	+9·5703	+9·5728	+9·5752	+9·5775	Log. Q'		
−9·5462	−9·5499	−9·5534	−9·5566	−9·5601	−9·5633	−9·5663	−9·5692	−9·5719	−9·5745	Log. R'		
+9·9713	+9·9707	+9·9702	+9·9697	+9·9692	+9·9687	+9·9683	+9·9678	+9·9674	+9·9670	Log. S'		
+9·9787	+9·9776	+9·9766	+9·9756	+9·9747	+9·9738	+9·9729	+9·9720	+9·9712	+9·9704	Log. P'	89°	
+9·5538	+9·5570	+9·5600	+9·5630	+9·5658	+9·5685	+9·5711	+9·5736	+9·5759	+9·5782	Log. Q'		
−9·5462	−9·5499	−9·5534	−9·5566	−9·5601	−9·5633	−9·5663	−9·5692	−9·5719	−9·5745	Log. R'		
+9·9713	+9·9707	+9·9702	+9·9697	+9·9692	+9·9687	+9·9683	+9·9678	+9·9674	+9·9670	Log. S'		
+9·9801	+9·9790	+9·9779	+9·9769	+9·9759	+9·9750	+9·9741	+9·9732	+9·9724	+9·9715	Log. P'	90°	
+9·5550	+9·5582	+9·5612	+9·5642	+9·5670	+9·5697	+9·5722	+9·5746	+9·5769	+9·5791	Log. Q'		
−9·5462	−9·5499	−9·5534	−9·5566	−9·5601	−9·5633	−9·5663	−9·5692	−9·5719	−9·5745	Log. R'		
+9·9714	+9·9708	+9·9703	+9·9698	+9·9693	+9·9688	+9·9684	+9·9679	+9·9675	+9·9671	Log. S'		
+9·9814	+9·9803	+9·9792	+9·9782	+9·9772	+9·9762	+9·9753	+9·9743	+9·9734	+9·9725	Log. P'	91°	
+9·5566	+9·5597	+9·5626	+9·5655	+9·5683	+9·5710	+9·5735	+9·5759	+9·5781	+9·5802	Log. Q'		
−9·5462	−9·5499	−9·5534	−9·5566	−9·5601	−9·5632	−9·5663	−9·5692	−9·5719	−9·5745	Log. R'		
+9·9713	+9·9707	+9·9702	+9·9697	+9·9692	+9·9687	+9·9683	+9·9678	+9·9674	+9·9670	Log. S'		
+9·9829	+9·9817	+9·9805	+9·9794	+9·9784	+9·9774	+9·9764	+9·9754	+9·9744	+9·9734	Log. P'	92°	
+9·5584	+9·5615	+9·5643	+9·5671	+9·5699	+9·5725	+9·5750	+9·5773	+9·5795	+9·5816	Log. Q'		
−9·5462	−9·5499	−9·5534	−9·5566	−9·5601	−9·5632	−9·5663	−9·5692	−9·5719	−9·5745	Log. R'		
+9·9713	+9·9707	+9·9702	+9·9697	+9·9692	+9·9687	+9·9683	−9·9678	+9·9674	+9·9670	Log. S'		
+9·9843	+9·9830	+9·9818	+9·9807	+9·9796	+9·9785	+9·9775	+9·9764	+9·9754	+9·9744	Log. P'	93°	
+9·5605	+9·5635	+9·5663	+9·5691	+9·5718	+9·5743	+9·5767	+9·5790	+9·5812	+9·5832	Log. Q'		
−9·5462	−9·5499	−9·5534	−9·5566	−9·5600	−9·5631	−9·5662	−9·5691	−9·5719	−9·5745	Log. R'		
+9·9712	+9·9707	+9·9702	+9·9697	+9·9692	+9·9687	+9·9682	+9·9677	+9·9673	+9·9669	Log. S'		
+9·9856	+9·9843	+9·9831	+9·9820	+9·9808	+9·9797	+9·9785	+9·9774	+9·9763	+9·9752	Log. P'	94°	
+9·5628	+9·5657	+9·5685	+9·5712	+9·5739	+9·5764	+9·5787	+9·5809	+9·5831	+9·5851	Log. Q'		
−9·5461	−9·5497	−9·5533	−9·5566	−9·5600	−9·5631	−9·5662	−9·5691	−9·5719	−9·5745	Log. R'		
+9·9712	+9·9706	+9·9701	+9·9696	+9·9691	+9·9686	+9·9681	+9·9676	+9·9672	+9·9668	Log. S'		
+9·9869	+9·9857	+9·9844	+9·9831	+9·9819	+9·9807	+9·9795	+9·9783	+9·9772	+9·9761	Log. P'	95°	
+9·5653	+9·5682	+9·5709	+9·5736	+9·5761	+9·5786	+9·5809	+9·5831	+9·5852	+9·5872	Log. Q'		
−9·5461	−9·5497	−9·5533	−9·5566	−9·5599	−9·5631	−9·5661	−9·5690	−9·5718	−9·5745	Log. R'		
+9·9711	+9·9705	+9·9700	+9·9695	+9·9690	+9·9685	+9·9680	+9·9675	+9·9671	+9·9667	Log. S'		
+9·9882	+9·9869	+9·9856	+9·9843	+9·9830	+9·9817	+9·9804	+9·9792	+9·9780	+9·9769	Log. P'	96°	
+9·5681	+9·5709	+9·5736	+9·5762	+9·5787	+9·5810	+9·5833	+9·5855	+9·5876	+9·5896	Log. Q'		
−9·5461	−9·5497	−9·5532	−9·5566	−9·5599	−9·5631	−9·5661	−9·5690	−9·5718	−9·5745	Log. R'		
+9·9710	+9·9705	+9·9700	+9·9695	+9·9690	+9·9685	+9·9680	+9·9675	+9·9671	+9·9666	Log. S'		
330°	331°	332°	333°	334°	335°	336°	337°	338°	339°			

Longitude.

TABLES for converting Small Changes of LONGITUDE and ECLIPTIC NORTH POLAR DISTANCE

{Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D.}
{Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D.}

Ecliptic North Polar Distance.		Longitude. 340°	341°	342°	343°	344°	345°	346°	347°	348°	349°
84°	Log. P'	+9·9641	+9·9636	+9·9632	+9·9628	+9·9624	+9·9620	+9·9617	+9·9614	+9·9612	+9·9610
	Log. Q'	+9·5798	+9·5820	+9·5841	+9·5861	+9·5879	+9·5896	+9·5912	+9·5927	+9·5940	+9·5954
	Log. R'	−9·5771	−9·5794	−9·5816	−9·5836	−9·5855	−9·5872	−9·5888	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9662	+9·9658	+9·9655	+9·9651	+9·9648	+9·9645	+9·9642	+9·9639	+9·9636	+9·9634
85°	Log. P'	+9·9653	+9·9648	+9·9643	+9·9638	+9·9634	+9·9630	+9·9626	+9·9623	+9·9620	+9·9618
	Log. Q'	+9·5794	+9·5816	+9·5836	+9·5855	+9·5873	+9·5890	+9·5905	+9·5920	+9·5933	+9·5946
	Log. R'	−9·5771	−9·5794	−9·5816	−9·5836	−9·5855	−9·5872	−9·5888	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9663	+9·9659	+9·9656	+9·9652	+9·9649	+9·9645	+9·9642	+9·9639	+9·9637	+9·9634
86°	Log. P'	+9·9665	+9·9659	+9·9653	+9·9648	+9·9643	+9·9639	+9·9635	+9·9631	+9·9628	+9·9625
	Log. Q'	+9·5793	+9·5814	+9·5834	+9·5852	+9·5869	+9·5885	+9·5900	+9·5914	+9·5928	+9·5941
	Log. R'	−9·5771	−9·5794	−9·5816	−9·5836	−9·5854	−9·5871	−9·5888	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9664	+9·9660	+9·9657	+9·9653	+9·9650	+9·9646	+9·9643	+9·9640	+9·9638	+9·9635
87°	Log. P'	+9·9676	+9·9669	+9·9663	+9·9657	+9·9652	+9·9647	+9·9643	+9·9639	+9·9636	+9·9633
	Log. Q'	+9·5794	+9·5815	+9·5834	+9·5852	+9·5868	+9·5884	+9·5899	+9·5913	+9·5925	+9·5937
	Log. R'	−9·5770	−9·5793	−9·5815	−9·5834	−9·5853	−9·5870	−9·5887	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9665	+9·9661	+9·9657	+9·9653	+9·9650	+9·9647	+9·9644	+9·9641	+9·9639	+9·9636
88°	Log. P'	+9·9687	+9·9680	+9·9673	+9·9667	+9·9661	+9·9656	+9·9651	+9·9647	+9·9643	+9·9639
	Log. Q'	+9·5797	+9·5817	+9·5836	+9·5853	+9·5869	+9·5884	+9·5899	+9·5913	+9·5925	+9·5937
	Log. R'	−9·5770	−9·5793	−9·5815	−9·5834	−9·5853	−9·5870	−9·5887	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9666	+9·9662	+9·9658	+9·9654	+9·9651	+9·9648	+9·9645	+9·9642	+9·9640	+9·9638
89°	Log. P'	+9·9697	+9·9690	+9·9683	+9·9674	+9·9669	+9·9664	+9·9659	+9·9654	+9·9650	+9·9646
	Log. Q'	+9·5803	+9·5823	+9·5841	+9·5858	+9·5873	+9·5888	+9·5902	+9·5915	+9·5927	+9·5938
	Log. R'	−9·5770	−9·5793	−9·5815	−9·5834	−9·5853	−9·5870	−9·5887	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9666	+9·9662	+9·9658	+9·9654	+9·9651	+9·9648	+9·9645	+9·9642	+9·9640	+9·9638
90°	Log. P'	+9·9707	+9·9699	+9·9692	+9·9685	+9·9677	+9·9672	+9·9666	+9·9661	+9·9656	+9·9651
	Log. Q'	+9·5811	+9·5830	+9·5848	+9·5864	+9·5879	+9·5893	+9·5907	+9·5920	+9·5932	+9·5943
	Log. R'	−9·5770	−9·5793	−9·5815	−9·5834	−9·5853	−9·5870	−9·5887	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9667	+9·9663	+9·9659	+9·9655	+9·9652	+9·9649	+9·9646	+9·9643	+9·9641	+9·9639
91°	Log. P'	+9·9716	+9·9708	+9·9700	+9·9692	+9·9685	+9·9678	+9·9672	+9·9666	+9·9661	+9·9656
	Log. Q'	+9·5822	+9·5841	+9·5858	+9·5874	+9·5888	+9·5902	+9·5915	+9·5927	+9·5939	+9·5950
	Log. R'	−9·5770	−9·5793	−9·5815	−9·5834	−9·5853	−9·5870	−9·5887	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9666	+9·9662	+9·9658	+9·9654	+9·9651	+9·9648	+9·9645	+9·9642	+9·9640	+9·9638
92°	Log. P'	+9·9725	+9·9716	+9·9708	+9·9700	+9·9692	+9·9685	+9·9678	+9·9672	+9·9666	+9·9660
	Log. Q'	+9·5835	+9·5853	+9·5870	+9·5886	+9·5900	+9·5914	+9·5926	+9·5938	+9·5948	+9·5958
	Log. R'	−9·5770	−9·5793	−9·5815	−9·5834	−9·5853	−9·5870	−9·5887	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9666	+9·9662	+9·9658	+9·9654	+9·9651	+9·9648	+9·9645	+9·9642	+9·9640	+9·9638
93°	Log. P'	+9·9734	+9·9725	+9·9716	+9·9707	+9·9699	+9·9691	+9·9684	+9·9677	+9·9671	+9·9665
	Log. Q'	+9·5851	+9·5869	+9·5885	+9·5900	+9·5914	+9·5927	+9·5939	+9·5950	+9·5960	+9·5969
	Log. R'	−9·5770	−9·5794	−9·5816	−9·5835	−9·5854	−9·5871	−9·5888	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9665	+9·9661	+9·9657	+9·9653	+9·9650	+9·9647	+9·9644	+9·9641	+9·9638	+9·9636
94°	Log. P'	+9·9742	+9·9732	+9·9723	+9·9714	+9·9705	+9·9697	+9·9689	+9·9682	+9·9675	+9·9668
	Log. Q'	+9·5870	+9·5887	+9·5903	+9·5918	+9·5931	+9·5944	+9·5955	+9·5964	+9·5974	+9·5983
	Log. R'	−9·5771	−9·5794	−9·5816	−9·5835	−9·5854	−9·5871	−9·5888	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9664	+9·9660	+9·9657	+9·9653	+9·9650	+9·9646	+9·9643	+9·9640	+9·9637	+9·9635
95°	Log. P'	+9·9750	+9·9740	+9·9730	+9·9720	+9·9711	+9·9702	+9·9694	+9·9686	+9·9679	+9·9672
	Log. Q'	+9·5891	+9·5908	+9·5923	+9·5937	+9·5950	+9·5962	+9·5973	+9·5983	+9·5991	+9·5999
	Log. R'	−9·5771	−9·5794	−9·5816	−9·5836	−9·5855	−9·5872	−9·5888	−9·5902	−9·5916	−9·5929
	Log. S'	+9·9663	+9·9659	+9·9656	+9·9652	+9·9649	+9·9645	+9·9642	+9·9639	+9·9636	+9·9634
96°	Log. P'	+9·9758	+9·9747	+9·9737	+9·9727	+9·9717	+9·9708	+9·9699	+9·9690	+9·9682	+9·9674
	Log. Q'	+9·5915	+9·5932	+9·5947	+9·5960	+9·5972	+9·5983	+9·5993	+9·6002	+9·6010	+9·6017
	Log. R'	−9·5771	−9·5794	−9·5816	−9·5836	−9·5855	−9·5872	−9·5888	−9·5903	−9·5916	−9·5928
	Log. S'	+9·9662	+9·9658	+9·9655	+9·9651	+9·9648	+9·9645	+9·9642	+9·9639	+9·9636	+9·9634
		340°	341°	342°	343°	344°	345°	346°	347°	348°	349°

Longitude.

into Changes of RIGHT ASCENSION (in arc) and NORTH POLAR DISTANCE.

{ Change of R. A. in arc = P' × change of Longitude + Q' × change of Ec. N. P. D. }
{ Change of N. P. D. = R' × change of Longitude + S' × change of Ec. N. P. D. }

Ecliptic North Polar Distance.

Longitude.											
350°	351°	352°	353°	354°	355°	356°	357°	358°	359°		
+9·9609	+9·9608	+9·9608	+9·9608	+9·9608	+9·9608	+9·9609	+9·9610	+9·9612	+9·9614	Log. P'	84°
+9·5967	+9·5979	+9·5991	+9·6001	+9·6009	+9·6017	+9·6023	+9·6029	+9·6034	+9·6038	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5995	−9·5997	Log. R'	
+9·9632	+9·9630	+9·9628	+9·9626	+9·9625	+9·9624	+9·9623	+9·9622	+9·9622	+9·9621	Log. S'	
+9·9616	+9·9615	+9·9614	+9·9613	+9·9613	+9·9613	+9·9613	+9·9614	+9·9615	+9·9617	Log. P'	85°
+9·5959	+9·5971	+9·5981	+9·5990	+9·5998	+9·6005	+9·6011	+9·6016	+9·6021	+9·6025	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5995	−9·5997	Log. R'	
+9·9632	+9·9630	+9·9629	+9·9627	+9·9626	+9·9625	+9·9624	+9·9623	+9·9623	+9·9622	Log. S'	
+9·9623	+9·9621	+9·9620	+9·9619	+9·9618	+9·9617	+9·9617	+9·9617	+9·9618	+9·9619	Log. P'	86°
+9·5953	+9·5964	+9·5974	+9·5983	+9·5990	+9·5997	+9·6002	+9·6007	+9·6011	+9·6014	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9633	+9·9631	+9·9630	+9·9628	+9·9627	+9·9626	+9·9625	+9·9624	+9·9624	+9·9623	Log. S'	
+9·9630	+9·9627	+9·9625	+9·9623	+9·9622	+9·9621	+9·9621	+9·9621	+9·9621	+9·9622	Log. P'	87°
+9·5949	+9·5960	+9·5969	+9·5978	+9·5985	+9·5991	+9·5996	+9·6000	+9·6004	+9·6007	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9634	+9·9632	+9·9631	+9·9629	+9·9628	+9·9627	+9·9626	+9·9625	+9·9625	+9·9624	Log. S'	
+9·9636	+9·9633	+9·9630	+9·9628	+9·9626	+9·9625	+9·9624	+9·9624	+9·9623	+9·9623	Log. P'	88°
+9·5948	+9·5958	+9·5967	+9·5975	+9·5982	+9·5988	+9·5992	+9·5996	+9·5999	+9·6001	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9625	Log. S'	
+9·9642	+9·9637	+9·9635	+9·9632	+9·9630	+9·9628	+9·9627	+9·9626	+9·9625	+9·9625	Log. P'	89°
+9·5949	+9·5959	+9·5967	+9·5975	+9·5981	+9·5986	+9·5990	+9·5993	+9·5996	+9·5998	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9626	Log. S'	
+9·9647	+9·9643	+9·9639	+9·9636	+9·9633	+9·9631	+9·9629	+9·9627	+9·9626	+9·9625	Log. P'	90°
+9·5953	+9·5962	+9·5970	+9·5977	+9·5983	+9·5988	+9·5991	+9·5994	+9·5996	+9·5997	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9637	+9·9635	+9·9633	+9·9631	+9·9630	+9·9629	+9·9628	+9·9627	+9·9627	+9·9626	Log. S'	
+9·9651	+9·9647	+9·9643	+9·9639	+9·9636	+9·9633	+9·9631	+9·9629	+9·9627	+9·9626	Log. P'	91°
+9·5959	+9·5968	+9·5975	+9·5982	+9·5987	+9·5991	+9·5994	+9·5996	+9·5998	+9·5999	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9626	Log. S'	
+9·9655	+9·9650	+9·9646	+9·9642	+9·9638	+9·9635	+9·9632	+9·9629	+9·9627	+9·9625	Log. P'	92°
+9·5967	+9·5975	+9·5983	+9·5989	+9·5994	+9·5998	+9·6000	+9·6002	+9·6003	+9·6003	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9636	+9·9634	+9·9632	+9·9630	+9·9629	+9·9628	+9·9627	+9·9626	+9·9626	+9·9625	Log. S'	
+9·9659	+9·9654	+9·9649	+9·9644	+9·9640	+9·9636	+9·9633	+9·9630	+9·9627	+9·9624	Log. P'	93°
+9·5978	+9·5986	+9·5993	+9·5999	+9·6003	+9·6007	+9·6008	+9·6009	+9·6010	+9·6010	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9634	+9·9632	+9·9631	+9·9629	+9·9628	+9·9627	+9·9626	+9·9625	+9·9625	+9·9624	Log. S'	
+9·9662	+9·9656	+9·9651	+9·9646	+9·9641	+9·9637	+9·9633	+9·9629	+9·9626	+9·9623	Log. P'	94°
+9·5991	+9·5998	+9·6005	+9·6010	+9·6014	+9·6016	+9·6018	+9·6019	+9·6019	+9·6018	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5996	−9·5997	Log. R'	
+9·9633	+9·9631	+9·9630	+9·9628	+9·9627	+9·9626	+9·9625	+9·9624	+9·9624	+9·9623	Log. S'	
+9·9665	+9·9659	+9·9653	+9·9647	+9·9642	+9·9637	+9·9633	+9·9629	+9·9625	+9·9622	Log. P'	95°
+9·6007	+9·6014	+9·6020	+9·6023	+9·6028	+9·6030	+9·6031	+9·6031	+9·6031	+9·6030	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5995	−9·5997	Log. R'	
+9·9632	+9·9630	+9·9629	+9·9627	+9·9626	+9·9625	+9·9624	+9·9623	+9·9623	+9·9622	Log. S'	
+9·9667	+9·9660	+9·9654	+9·9648	+9·9642	+9·9637	+9·9632	+9·9628	+9·9624	+9·9620	Log. P'	96°
+9·6025	+9·6031	+9·6037	+9·6041	+9·6044	+9·6045	+9·6046	+9·6046	+9·6045	+9·6043	Log. Q'	
−9·5941	−9·5952	−9·5963	−9·5972	−9·5979	−9·5985	−9·5989	−9·5993	−9·5995	−9·5997	Log. R'	
+9·9632	+9·9630	+9·9628	+9·9626	+9·9625	+9·9624	+9·9623	+9·9622	+9·9622	+9·9621	Log. S'	
350°	351°	352°	353°	354°	355°	356°	357°	358°	359°		
Longitude.											